

University District Specific Plan Amendment TRAFFIC IMPACT ASSESSMENT REPORT

Prepared for

City of San Marcos

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Prepared by



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INTRODUCTION

This study includes an assessment of the potential traffic impacts associated with the proposed University District Specific Plan Amendment (UDSPA). The focus of the traffic impact assessment is a determination of whether the SPA will introduce additional traffic impacts that were not identified in the original UDSP EIR Traffic Impact Analysis prepared in 2009.

The University District Specific Plan project is located on an approximately 194-acre site in the City of San Marcos. The project site is bounded by the SR-78 Freeway to the north, Discovery Street and Barham Drive to the south, Bent Avenue to the west, and the NCTD SPRINTER rail line to the east. Exhibit 1 shows the proposed project site plan.

This traffic impact assessment includes a review of various traffic-related factors that have a primary influence on the potential for the revised project to generate traffic impacts. The key traffic-related factors include:

- Land use changes and associated traffic generation;
- Changes to project-related trip assignment at build-out on study area roadways and at study area intersections;
- Changes to project-related traffic impacts;
- Changes to required mitigation measures;
- Changes to on-site traffic circulation needs; and
- Changes to mitigation phasing requirements.

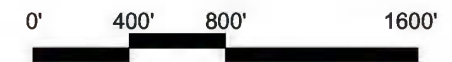
PROJECT DESCRIPTION

At full build-out the proposed UDSPA project will consist of the following uses:

- 3,400 Mixed-Use Multi-Family Dwelling Units
- 700,000 square-feet Mixed-Use Community Commercial
- 652,000 square-feet Mixed-Use Office
- 300,000 square-feet Mixed-Use Medical Office
- 450 Hotel Rooms
- 30,000 square-foot Community Center
- 850-student Elementary School (pending School District decision)

The UDSPA project will continue to include construction of a new bridge crossing over the SR-78 freeway to provide direct access to the site from San Marcos Boulevard between SR-78 and Twin Oaks Valley Road. The proposed bridge crossing will be generally aligned with Westlake Drive, and a new signalized four-way intersection will be constructed at San Marcos Boulevard / Westlake Drive. An internal street network will be built throughout the project site, with access intersections provided on Discovery Street, Barham Drive, and Twin Oaks Valley Road. The project will also provide a third westbound lane on Barham Drive along the project frontage between Twin Oaks Valley Road and the eastern boundary of the project site.

FIGURE III.E: Neighborhoods / Districts Illustrative



LEGEND



STUDY AREA

In accordance with the original University District Specific Plan Traffic Impact Analysis the following 48 intersections were included in the traffic impact assessment:

- 1) Mission Road / Knoll Road
- 2) Mission Road / Pico Avenue
- 3) Las Posas Road / SR-78 Westbound Ramps
- 4) Las Posas Road / Grand Avenue
- 5) Via Vera Cruz / Grand Avenue
- 6) Via Vera Cruz / Linda Vista Drive
- 7) Bent Avenue / Grand Avenue
- 8) Knoll Road / Los Vallecitos Boulevard
- 9) San Marcos Boulevard / Rancho Santa Fe Road
- 10) San Marcos Boulevard / Discovery Street
- 11) San Marcos Boulevard / Las Posas Road
- 12) San Marcos Boulevard / Via Vera Cruz
- 13) San Marcos Boulevard / Bent Avenue
- 14) San Marcos Boulevard / Grand Avenue
- 15) San Marcos Boulevard / SR-78 Eastbound Ramps
- 16) San Marcos Boulevard / SR-78 Westbound Ramps-Knoll Road
- 17) San Marcos Boulevard / Westlake Drive
- 18) San Marcos Boulevard / Pico Avenue
- 19) San Marcos Boulevard / Twin Oaks Valley Road
- 20) San Marcos Boulevard / Rancheros Drive
- 21) San Marcos Boulevard-Vineyard Road / Mission Road
- 22) Discovery Street / La Sombra Drive
- 23) Discovery Street / Via Vera Cruz
- 24) Discovery Street / Bent Avenue-Craven Road (*only Bent in future*)
- 25) Discovery Street / Craven Road (*future intersection*)
- 26) Discovery Street / Grand Avenue (*future intersection*)
- 27) Discovery Street / Rush Drive (*future intersection*)
- 28) Discovery Street-Barham Drive / Twin Oaks Valley Road
- 29) Barham Drive / Campus Way
- 30) Barham Drive / La Moree Road
- 31) Barham Drive / Hill Street
- 32) Barham Drive / SR-78 Eastbound Off-Ramp
- 33) Barham Drive / Woodland Parkway
- 34) Woodland Parkway / Rancheros Drive
- 35) Rancheros Drive / SR-78 Westbound Ramps
- 36) Twin Oaks Valley Road / Borden Road
- 37) Twin Oaks Valley Road / Richmar Avenue

- 38) Twin Oaks Valley Road / SR-78 Westbound Ramps
- 39) Twin Oaks Valley Road / SR-78 Eastbound Ramps
- 40) Twin Oaks Valley Road / Carmel Street
- 41) Twin Oaks Valley Road / Campus Marketplace Driveway
- 42) Twin Oaks Valley Road / Craven Road
- 43) Craven Road / Rush Drive
- 44) Twin Oaks Valley Road / (North) Village Drive
- 45) Twin Oaks Valley Road / (South) Village Drive
- 46) Twin Oaks Valley Road / Street "C" (*Project Intersection*)
- 47) Discovery Street / Street "A" (*Project Intersection*)
- 48) Barham Drive / Street "E" (*Project Intersection*)

The proposed project study area intersections are shown graphically in Exhibit 2.

PROJECT TRIP GENERATION

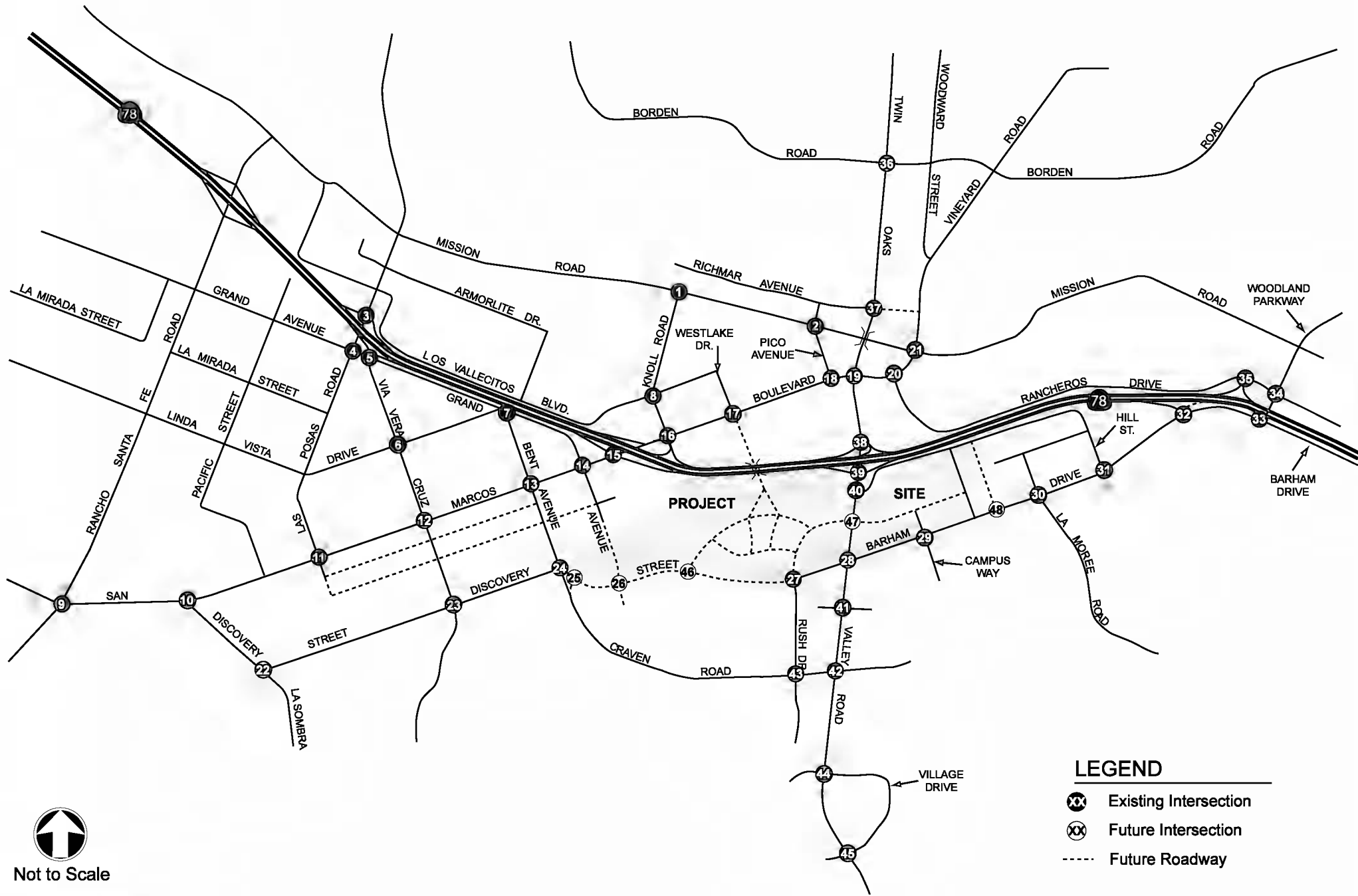
Table 1 presents the SANDAG trip generation rates that were used for the land uses associated with the proposed project. The trip generation estimated for the original UDSP is summarized in Table 2.

Table 1
SANDAG Trip Generation Rates for Proposed Land Uses

Land Use	Unit	Daily Trip Rate	AM Peak Rate	AM In	AM Out	PM Peak Rate	PM In	PM Out
Mixed Use Multi-Family Residential	DU	6	8%	20%	80%	9%	70%	30%
Mixed Use Community Commercial	KSF	80.0	4%	60%	40%	10%	50%	50%
Mixed Use Office	KSF	17	13%	90%	10%	14%	20%	80%
Mixed Use Medical Office	KSF	50.0	6%	80%	20%	11%	30%	70%
Hotel	rooms	10	6%	60%	40%	8%	60%	40%
Community Center (ITE) ⁽²⁾	KSF	22.88	7%	61%	39%	7%	29%	71%
Elementary School	students	1.6	32%	60%	40%	9%	40%	60%

Source: SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002).

Table 3 presents the UDSPA project trip generation at project build-out. As shown in Table 3, at project build-out, the proposed UDSPA project is forecast to generate approximately 92,880 trips per day, with approximately 5,970 trips occurring during the a.m. peak hour, and 9,511 trips occurring during the p.m. peak hour. In comparison, the original UDSP project was estimated to generate approximately 114,697 trips per day, with approximately 6,970 trips occurring during the a.m. peak hour, and 11,749 trips occurring during the p.m. peak hour. The trip generation comparison shows the UDSPA will reduce the UDSP daily and p.m. peak hour trips by 19% and the a.m. peak hour trips by 14%. The reduction in project trips on the west side portion of the project is 34% during the more critical p.m. peak while the reduction in project trips on the east side portion of the project is estimated at approximately 6% during the p.m. peak.



Not to Scale



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PROJECT STUDY AREA
Exhibit 2

Table 2
Original UDSP Project Trip Generation at Project Build-Out

Land Use	Intensity	Unit	Daily Trips	AM Trips	AM In	AM Out	PM Trips	PM In	PM Out
Mixed Use Multi-Family Residential	3,400	DU	20,400	1,632	326	1,306	1,836	1,285	551
Mixed Use Community Commercial	1,000	KSF	80,000	3,200	1,920	1,280	8,000	4,000	4,000
Mixed Use Office	750	KSF	12,750	1,658	1,492	166	1,785	357	1,428
Mixed Use Medical Office	300	KSF	15,000	900	720	180	1,650	495	1,155
Hotel	450	rooms	4,500	270	162	108	360	216	144
Community Center	30	KSF	686	49	30	19	49	14	35
Elementary School	850	students	1,360	435	261	174	122	49	73
Sub Total			134,696	8,143	4,911	3,232	13,803	6,416	7,386
10% Mixed Use Reduction ⁽¹⁾			-13,265	-766	-462	-304	-1,363	-635	-728
5% Transit Reduction			-6,735	-407	-246	-162	-690	-321	-369
NET PROJECT TRIPS			114,697	6,970	4,203	2,767	11,749	5,460	6,289

⁽¹⁾ SANDAG allows a 10% trip rate reduction for mixed-use developments where residential and commercial are combined.

⁽²⁾ SANDAG does not have a trip rate available for a Community Center; therefore, the ITE trip generation rate for Community Center was used instead. Source: Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition, 2003.

Table 3
Proposed UDSPA Project Trip Generation at Project Build-Out

Land Use	Intensity	Unit	Daily Trips	AM Trips	AM In	AM Out	PM Trips	PM In	PM Out
Mixed Use Multi-Family Residential	3,400	DU	20,400	1,632	326	1,306	1,836	1,285	551
Mixed Use Community Commercial	700	KSF	56,000	2,240	1,344	896	5,600	2,800	2,800
Mixed Use Office	652	KSF	11,084	1,441	1,297	144	1,552	310	1,241
Mixed Use Medical Office	300	KSF	15,000	900	720	180	1,650	495	1,155
Hotel	450	rooms	4,500	270	162	108	360	216	144
Community Center	30	KSF	686	49	30	19	49	14	35
Elementary School	850	students	1,360	435	261	174	122	49	73
Sub Total			109,030	6,967	4,140	2,827	11,169	5,170	6,000
10% Mixed Use Reduction ⁽¹⁾			-10,698	-648	-385	-263	-1,100	-511	-589
5% Transit Reduction			-5,452	-348	-207	-141	-558	-258	-300
NET PROJECT TRIPS			92,880	5,970	3,548	2,422	9,511	4,401	5,110

⁽¹⁾ SANDAG allows a 10% trip rate reduction for mixed-use developments where residential and commercial are combined.

⁽²⁾ SANDAG does not have a trip rate available for a Community Center; therefore, the ITE trip generation rate for Community Center was used instead. Source: Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition, 2003.

It is important to note that the ultimate land use yields are still in the conceptual stage and that the final project plan may result in land use yields that differ from what is shown in Table 3. However, the estimated trip generation shown in Table 3 represents the maximum number of trips that the project is assumed to generate at build-out in this impact assessment. The analysis results and mitigation requirements reported herein would be valid for any modifications to the land use yields that result in the same or less project trip generation during the more critical evening peak hour (e.g. 9,511 trips after mixed-use and transit reductions). It must also be noted that the residential trip generation calculation represents a “worst-case” condition. Since the project is considering including approximately 800 student housing units, this use is expected to generate significantly fewer trips per day than the standard multi-family dwelling unit.

Findings of the trip generation assessment for the UDSPA indicate that the proposed project will generate significantly less vehicle trips than the currently adopted UDSP. While the reduction in vehicle trips is a strong indicator that the traffic-related environmental impacts will likely be lower with the UDSPA than with the UDSP, further assessments and comparisons have been made related to the project traffic assignment within the study area.

PROJECT TRIP DISTRIBUTION

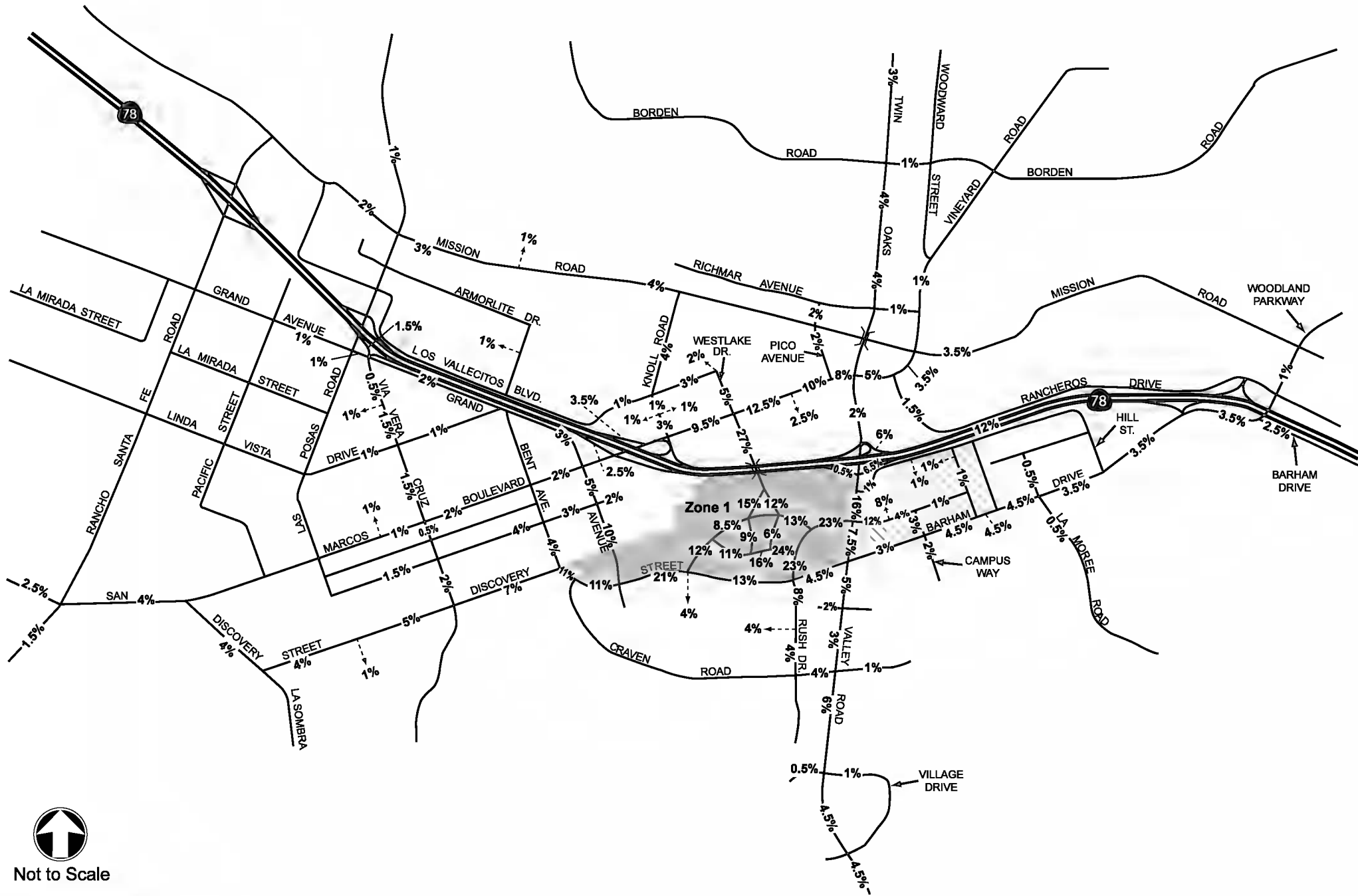
The general distribution of project traffic is not anticipated to change significantly from the trip distribution reported for the original UDSP Traffic Impact Assessment since the project continues to be a mixed-use project with a significantly higher percentage of non-residential trip generation. The estimated trip distribution for three traffic analysis zones within the project boundary is depicted in Exhibits 3A, 3B, and 3C. As with the original UDSP, the evening peak hour continues to have the highest portion of the daily project trips.

PROJECT TRIP ASSIGNMENT

Utilizing the project trip distribution identified in the original UDSP EIR Traffic Impact Analysis, the projected UDSPA project-generated trips were assigned to the roadway network. Table 4 lists the comparison of the projected assignment of the daily project trips for the UDSP and the proposed UDSPA at build-out. Peak hour project-related traffic assignments are compared for the UDSP and the UDSPA in Exhibits 4 and 5 for the morning and evening peak hours respectively.

OFFSITE PROJECT TRAFFIC IMPACT ASSESSMENT

A comparison of project traffic assignments shown in Table 4 for the daily and Exhibits 3 and 4 for the a.m. peak hour and p.m. peak hour, demonstrate that in all cases the UDSPA will result in fewer project trips on roadway segments and at intersections throughout the study area. As such, there is no possibility for the UDSPA project to introduce new off-site traffic impacts that were not identified in the original UDSP EIR Traffic Impact Analysis.



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PROJECT TRIP DISTRIBUTION - ZONE ONE

Exhibit 3A



BBB

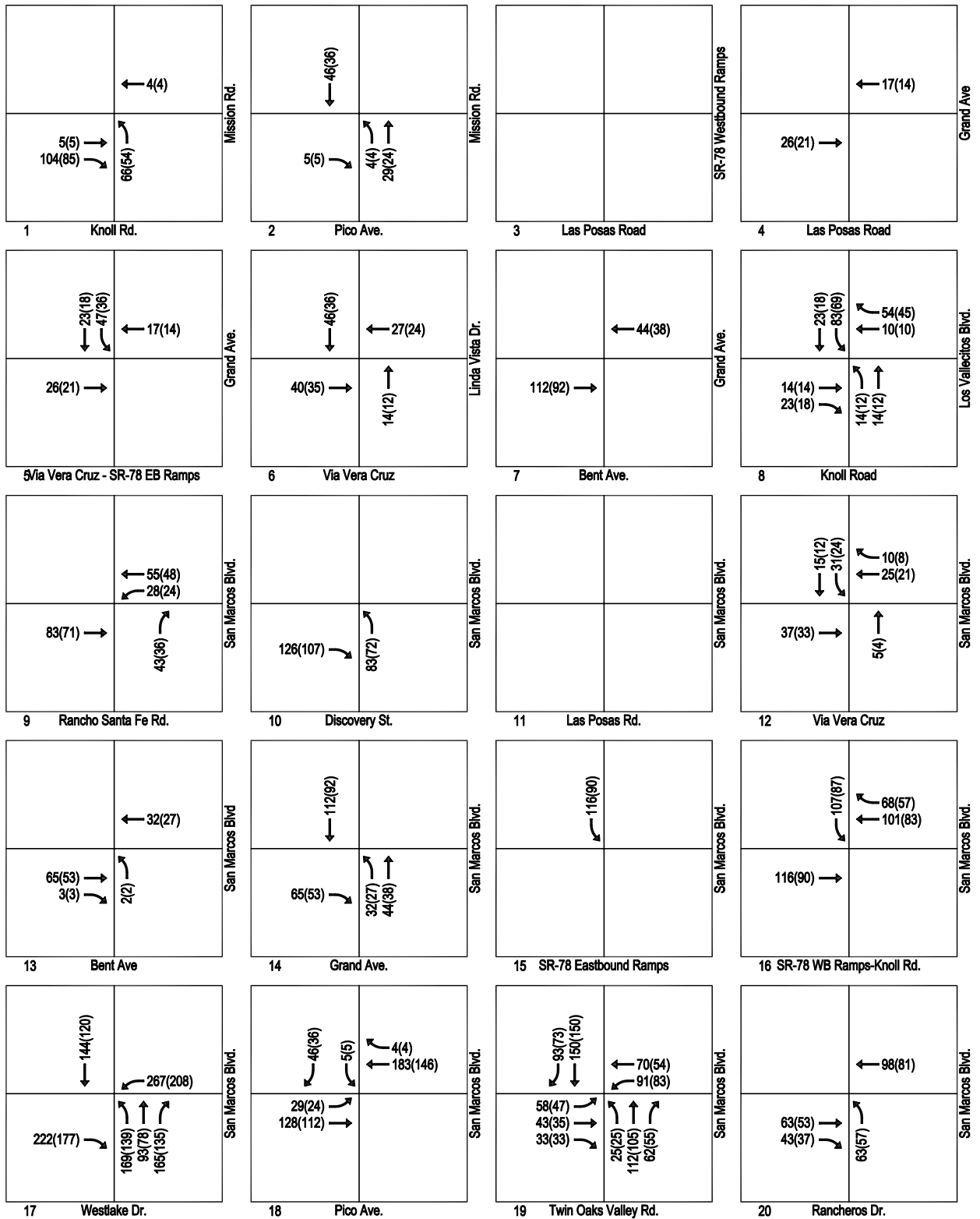
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Table 4
Daily Project Trip Comparison

Roadway	Location	Total Original UDSP Trips	Total Revised UDSP Trips	Reduction in Trips	% Reduction
Mission Rd.	Las Posas Rd. to Knoll Rd.	2,789	2,002	-787	28%
	Knoll Rd. to Pico Ave.	231	192	-39	17%
	East of Vineyard Rd.	2,515	1,822	-693	28%
San Marcos Blvd.	Rancho Santa Fe Rd. to Discovery St.	3,389	2,570	-818	24%
	Discovery St to Las Posas Rd.	0	0	0	0%
	Las Posas Rd. to Via Vera Cruz	1,031	831	-201	19%
	Via Vera Cruz to Bent Ave.	1,579	1,189	-390	25%
	Bent Ave. to Grand Ave.	1,579	1,189	-390	25%
	Grand Ave. to SR-78 EB Ramps	0	0	0	0%
	SR-78 WB Ramps-Knoll Rd. to Westlake Dr.	5,983	4,160	-1,823	30%
	Westlake Dr. to Pico Ave.	6,757	4,599	-2,158	32%
	Pico Ave. to Twin Oaks Valley Rd.	5,209	3,627	-1,582	30%
	Twin Oaks Valley Rd. to Rancheros Dr.	4,304	3,304	-1,000	23%
	Rancheros Dr. to Mission Rd.	2,515	1,822	-693	28%
Discovery Street	San Marcos Blvd. to La Sombra Dr.	3,573	2,758	-815	23%
	La Sombra Dr. to Via Vera Cruz	4,262	3,318	-944	22%
	Via Vera Cruz to Bent Ave./Craven Rd.	6,230	4,782	-1,448	23%
	Bent Ave./Craven Rd. to Grand Ave.	9,618	7,352	-2,266	24%
	Grand Ave. to Street "A"	17,627	13,392	-4,234	24%
	Street "A" to Rush Dr.	14,216	11,471	-2,746	19%
	Rush Dr. to Twin Oaks Valley Road	10,648	9,466	-1,182	11%
Barham Drive	Twin Oaks Valley Rd. to Campus Way	12,694	11,417	-1,277	10%
	Campus Way to La Moree Rd.	11,615	10,026	-1,589	14%
	La Moree Rd. to Hill St.	11,657	10,193	-1,465	13%
	Hill St. to SR-78 EB Ramps	13,919	12,283	-1,636	12%
	SR-78 EB Ramps to Woodland Pkwy.	10,458	9,056	-1,402	13%
Craven Rd.	Discovery St. to Rush Dr.	484	472	-12	2%
	Rush Dr. to Twin Oaks Valley Road	2,673	1,905	-768	29%
Las Posas Rd.	SR-78 to Grand Ave.	0	0	0	0%
Via Vera Cruz	Grand Ave. to Linda Vista Dr.	547	358	-189	35%
	Linda Vista Dr. to San Marcos Blvd.	821	537	-284	35%
Bent Ave.	Grand Ave to San Marcos Blvd.	0	0	0	0%
	San Marcos Blvd. to Discovery St.	3,389	2,570	-818	24%

Table 4 (continued)
Daily Project Trip Comparison

Roadway	Location	Total Original UDSP Trips	Total Revised UDSP Trips	Reduction in Trips	% Reduction
Grand Ave.	Las Posas Rd. to Via Vera Cruz	894	647	-247	28%
	Via Vera Cruz to Bent Ave.	1,210	813	-398	33%
	Bent Ave. to San Marcos Blvd.	2,357	1,740	-618	26%
	San Marcos Blvd. to Discovery St.	6,088	4,581	-1,507	25%
Knoll Rd.	Mission Rd. to Los Vallecitos Blvd.	2,673	1,905	-768	29%
	Los Vallecitos Blvd. to San Marcos Blvd.	1,579	1,189	-390	25%
Westlake Dr.	North of San Marcos Blvd.	3,704	2,736	-968	26%
	South of San Marcos Blvd.	17,081	11,939	-5,142	30%
Pico Ave.	Mission Rd to San Marcos Blvd.	1,326	909	-417	31%
Rush Dr.	Discovery St. to Craven Rd.	4,920	3,754	-1,165	24%
Twin Oaks Valley Rd.	Borden Road to Richmar Ave.	5,556	4,652	-904	16%
	Richmar Ave. to San Marcos Blvd.	7,071	5,954	-1,117	16%
	San Marcos Blvd. to SR-78 Ramps	7,828	7,153	-674	9%
	SR-78 Ramps to Street "C"	22,107	18,510	-3,597	16%
	Street "C" to Barham Dr./Discovery St.	13,694	11,953	-1,741	13%
	Barham Dr./Discovery St. to Craven Rd.	7,181	6,213	-969	13%
	Craven Rd. to (North) Village Dr.	7,250	5,937	-1,313	18%
	(North) Village Dr. to (South) Village Dr.	5,829	4,831	-999	17%
	South of (South) Village Dr.	5,645	4,643	-1,003	18%
Woodland Pkwy.	Rancheros Dr. to Barham Dr.	5,629	4,933	-696	12%
Street "A"	Discovery St. to Street "B"	7,167	4,868	-2,299	32%
	Street "B" to Westlake	5,804	4,178	-1,626	28%
	Westlake to Street "C"	10,203	7,679	-2,523	25%
Street "B"	Street "A" to Westlake	6,620	4,510	-2,110	32%
	Westlake to Street "C"	14,334	9,736	-4,599	32%
Street "C"	Rush Dr. to Street "B"	12,588	8,240	-4,347	35%
	Street "B" to Street "A"	10,745	7,832	-2,913	27%
	Street "A" to Twin Oaks Valley Rd.	19,779	15,233	-4,546	23%
	Twin Oaks Valley Rd. to Street "D"	23,953	20,956	-2,997	13%
	Street "D" to Industrial St.	16,597	14,566	-2,031	12%
Street "D"	Street "C" to Barham Dr.	11,710	10,983	-727	6%



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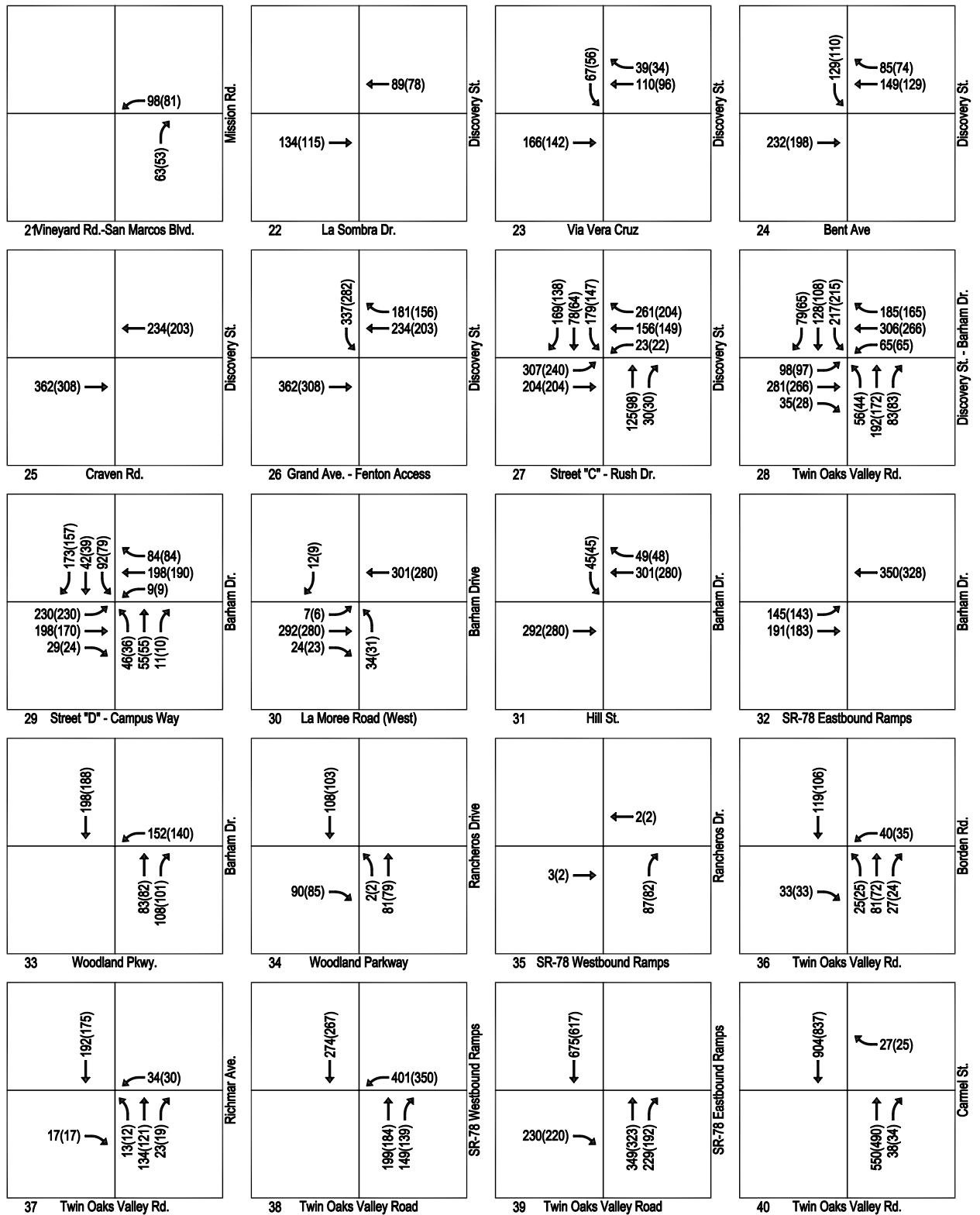
XX(XX) ORIGINAL UDSP(UDSPA) AM PEAK HOUR VOLUME



ORIGINAL UDSP VS UDSPA AM PEAK HOUR PROJECT TRIPS

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Exhibit 4 (page 1 of 3)



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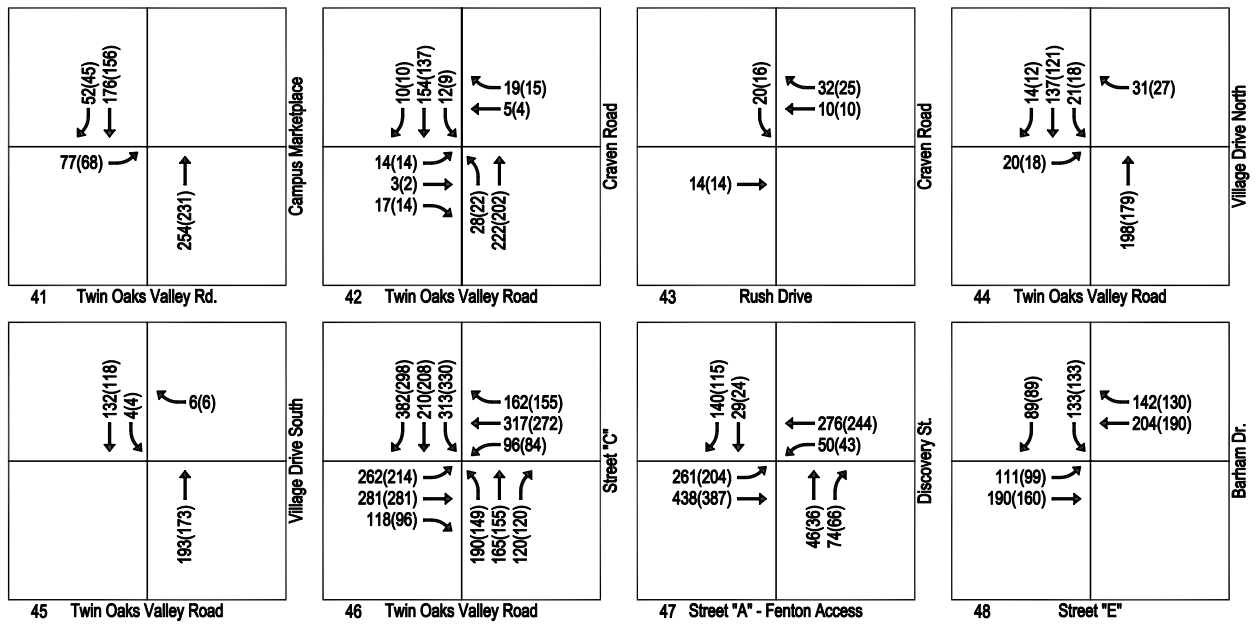
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ORIGINAL UDSP VS UDSPA AM PEAK HOUR PROJECT TRIPS

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Exhibit 4 (page 2 of 3)



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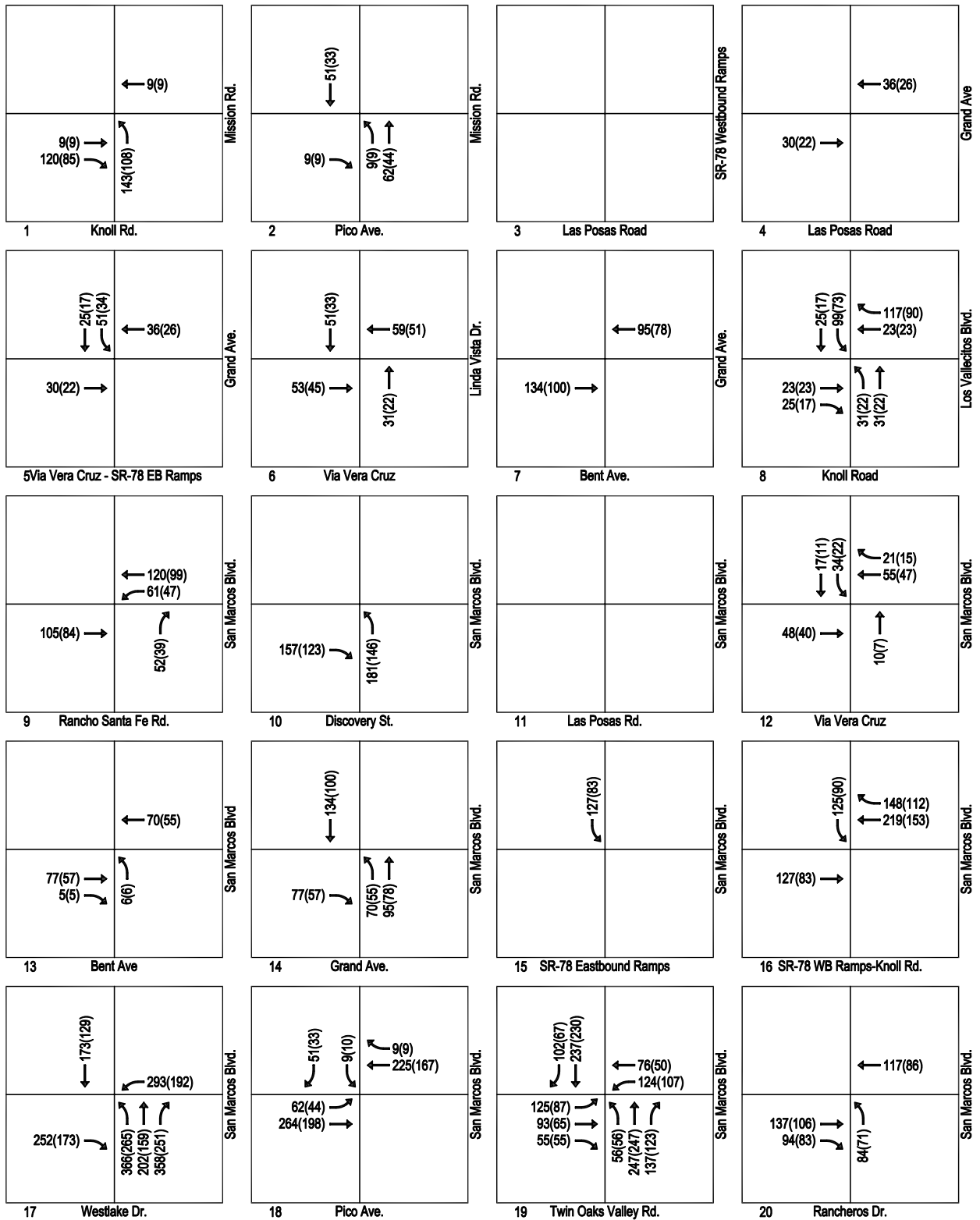
XX(XX) ORIGINAL UDSP(UDSPA) AM PEAK HOUR VOLUME



ORIGINAL UDSP VS UDSPA AM PEAK HOUR PROJECT TRIPS

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Exhibit 4 (page 3 of 3)



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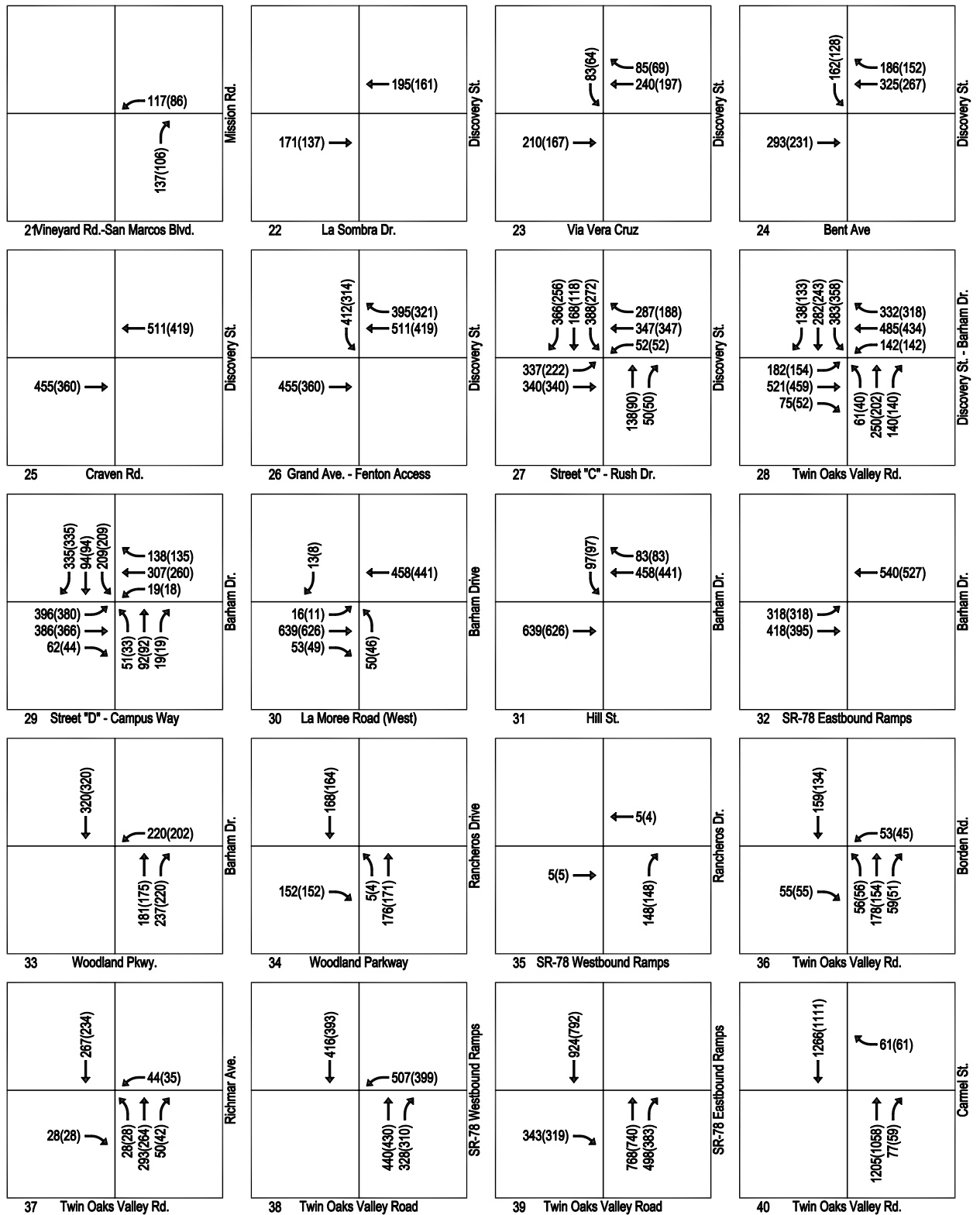
XX(XX) ORIGINAL UDSP(UDSPA) PM PEAK HOUR VOLUME



ORIGINAL UDSP VS UDSPA PM PEAK HOUR PROJECT TRIPS

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Exhibit 5 (page 1 of 3)



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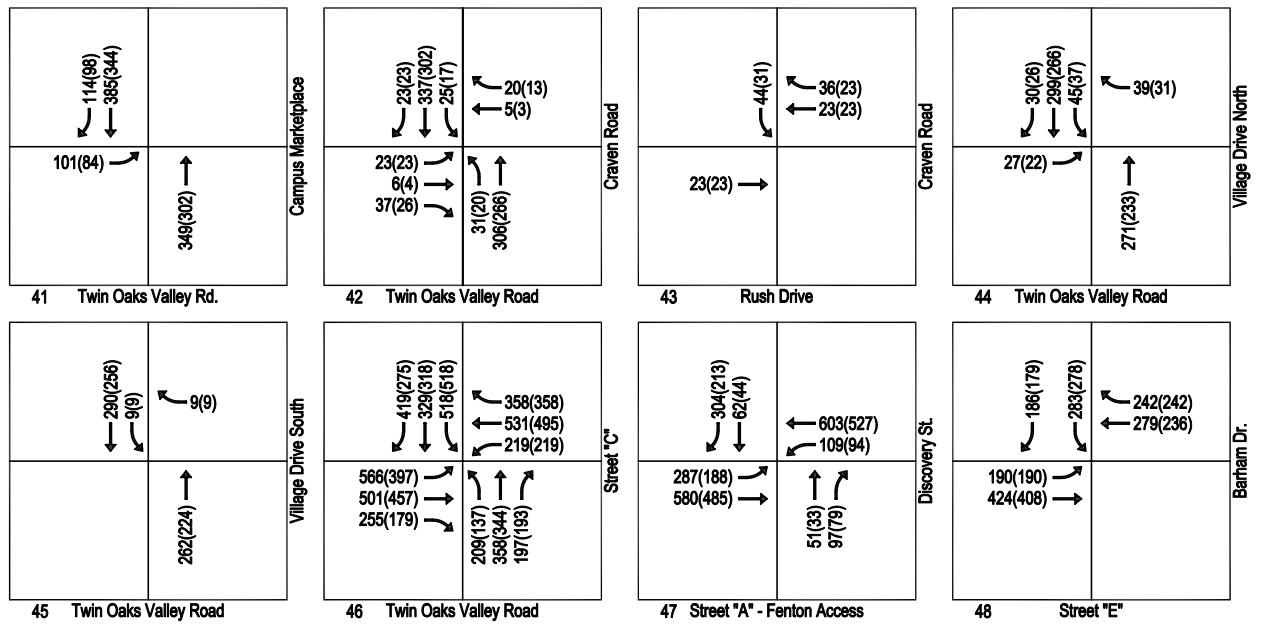
XX(XX) ORIGINAL UDSP(UDSPA) PM PEAK HOUR VOLUME



ORIGINAL UDSP VS UDSPA PM PEAK HOUR PROJECT TRIPS

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Exhibit 5 (page 2 of 3)



LEGEND

XX(XX) ORIGINAL UDSP(UDSPA) PM PEAK HOUR VOLUME



ORIGINAL UDSP VS UDSPA PM PEAK HOUR PROJECT TRIPS

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Exhibit 5 (page 3 of 3)

HORIZON YEAR 2030 SIGNIFICANT IMPACTS AND MITIGATION

Although the UDSPA project will have a lower level of traffic impact due to the lower trip generation, the project impacts would not be reduced below the level of significance. Furthermore, the applicant has agreed to maintain the same list of off-site mitigation measures that were identified in the original EIR Traffic Impact Analysis.

The following 11 intersections were identified as being significantly impacted by the project under Horizon Year 2030 conditions:

- Mission Road / Knoll Road
- San Marcos Blvd. / Rancho Santa Fe Road
- San Marcos Blvd. / Las Posas Road
- San Marcos Blvd. / Via Vera Cruz
- San Marcos Blvd. / Bent Avenue
- San Marcos Blvd. / Twin Oaks Valley Road
- Discovery Street / La Sombra Drive
- Barham Drive / La Moree Road
- Barham Drive / Woodland Parkway
- Twin Oaks Valley Road / Borden Road
- Twin Oaks Valley Road / SR-78 Eastbound Ramps

The following five roadway segments were identified as being significantly impacted by the project under Horizon Year 2030 conditions:

- Discovery Street, from San Marcos Blvd. to La Sombra Drive
- Discovery Street, from La Sombra Drive to Via Vera Cruz
- Bent Avenue, from San Marcos Blvd. to Discovery Street
- Westlake Drive, North of San Marcos Blvd.
- Twin Oaks Valley Road, from Richmar Avenue to San Marcos Blvd.

Mitigation measures have been identified for all of the above-listed intersections and roadway segments. The recommended mitigation measures for each significantly impacted intersection and roadway segment under Horizon Year 2030 conditions are described in detail below:

Recommended Horizon Year 2030 Intersection Improvements

Mission Road / Knoll Road

- Northbound: Restripe approach to provide one left-turn lane, one shared left-turn/through/right-turn lane, and one right-turn lane.

San Marcos Boulevard / Rancho Santa Fe Road

- Westbound: Provide a third left-turn lane.

Note: The recommended improvements at San Marcos Boulevard / Rancho Santa Fe Road would mitigate the significant impact by reducing the average intersection delay to lower than the delay without the project. Improving intersection operations to an acceptable level of service would require additional widening at the intersection approaches to increase capacity, which may not be feasible due to development constraints.

San Marcos Boulevard / Las Posas Road

- Northbound: Restripe approach to provide one left-turn lane, one shared left-turn/through lane, and one shared through/right-turn lane.
- Southbound: Provide a second right-turn lane. Modify signal to provide right-turn overlap phase. Prohibit u-turns during the corresponding eastbound left-turn phase.
- Convert signal phasing to split phasing for the northbound and southbound approaches.

San Marcos Boulevard / Via Vera Cruz

- Southbound: Reduce existing dual left-turn lanes to a single left-turn lane; restripe approach to provide one left-turn lane, one through lane, and one shared through/right-turn lane.
- Eastbound: Provide a dedicated right-turn lane.

San Marcos Boulevard / Bent Avenue

- Convert signal phasing to split phasing for the northbound and southbound approaches.
- Northbound: Restripe approach to provide one left-turn lane, one shared left-turn/through lane, and one right-turn lane.
- Southbound: Restripe approach to provide one left-turn lane, one shared left-turn/through lane, and one right-turn lane.
- Westbound: Provide a second left-turn lane.

San Marcos Boulevard / Twin Oaks Valley Road

- Northbound: Modify signal to provide right-turn overlap phase. Prohibit u-turns during the corresponding westbound left-turn phase.
- Southbound: Provide a dedicated right-turn lane.
- Westbound: Provide a third left-turn lane.

Discovery Street / La Sombra Drive

- Install traffic signal and provide the following lane geometries:
 - Northbound: Provide one shared through/right-turn lane (*same as existing conditions*).
 - Southbound: Restripe approach to provide one left-turn lane and one shared left-turn/through lane.
 - Westbound: Restripe approach to provide one left-turn lane and one right-turn lane. Provide a right-turn overlap phase.
 - Provide split phasing for the northbound and southbound approaches.

Barham Drive / La Moree Road (West)

- Northbound: Modify signal to provide right-turn overlap phase. Prohibit u-turns during the corresponding westbound left-turn phase.
- Southbound: Restripe approach to provide one left-turn lane and one shared through/right-turn lane.

Barham Drive / Woodland Parkway

- Westbound: Modify signal to provide right-turn overlap phase. Prohibit u-turns during the corresponding southbound left-turn phase.

Twin Oaks Valley Road / Borden Road

- Eastbound: Modify signal to provide right-turn overlap phase. Prohibit u-turns during the corresponding northbound left-turn phase.

Twin Oaks Valley Road / SR-78 Eastbound Ramps

- Eastbound (Off-Ramp Approach): Restripe approach to provide one left-turn lane, one shared left-turn/through/right-turn lane, and one right-turn lane. **(Note that this improvement has already been implemented by the City of San Marcos)**

Recommended Horizon Year 2030 Roadway Segment Improvements

Discovery Street, from San Marcos Boulevard to La Sombra Drive

- Improve roadway segment to four-lane Secondary Arterial standards.

Discovery Street, from La Sombra Drive to Via Vera Cruz

- Improve roadway segment to four-lane Secondary Arterial standards.

Note: The current City Circulation Element now has different designations for 4-lane roadways and the future widening of Discovery Street should be consistent with the current Circulation Element design standards.

Bent Avenue, from San Marcos Boulevard to Main Street (Creekside District)

- Improve roadway segment to four-lane roadway standards.

Note: The City Circulation Element classifies Bent Avenue as a two-lane roadway between San Marcos Boulevard and Discovery Street. The addition of traffic from the Creekside District Specific Plan project and other larger-scale projects results in daily roadway segment operations worsening to LOS F by Year 2030. The forecast Year 2030 ADT volume of 11,900 on Bent Avenue between San Marcos Boulevard and Discovery Street is an average of daily volumes along shorter segments within the Creekside District project, with the highest daily volume between San Marcos Boulevard and Main Street, and the lowest daily volume between Creekside Drive and Discovery Street. It is recommended that Bent Avenue from San Marcos Boulevard to Main Street be improved to four-lane roadway standards.

Bent Avenue, from Main Street (Creekside District) to Discovery Street

- Upgrade roadway segment to a two-lane roadway with continuous two-way left-turn lane (TWLTL).

Note: The existing daily capacity of Bent Avenue between San Marcos Boulevard and Discovery Street is 8,000 ADT is based on its current pavement width. Although Bent Avenue south of Main Street can remain with two travel lanes to operate at LOS D or better, it is recommended that Bent Avenue from Main Street to Discovery Street be improved to a two-lane Croadway with a continuous two-way left-turn lane (TWLTL).

Westlake Drive, North of San Marcos Boulevard

- Improve Westlake Drive from Dusty Lane to San Marcos Boulevard to a two-lane roadway with a two-way left-turn lane.

Note: This improvement can most likely be accommodated without physical widening; however, on-street parking would need to be prohibited to restripe the roadway as recommended.

Twin Oaks Valley Road, from Richmar Avenue to San Marcos Boulevard

- Improve intersection of Twin Oaks Valley Road / San Marcos Boulevard to provide peak hour operations at LOS D or better. The recommended improvements at Twin Oaks Valley Road / San Marcos Boulevard will also serve to mitigate the significant impact on this segment of Twin Oaks Valley Road.

Note: This 4-lane segment is totally access-controlled between the two intersections at either end and it is the operations of these two intersections during the peak hours that would most influence operations on this roadway segment. A close look at the peak hour directional volumes on this segment of Twin Oaks Valley Road showed that during the peak hours, a maximum of 1,600 vehicles would travel between Richmar Avenue and San Marcos Boulevard, or approximately 800 vehicles per lane. This is equivalent to the directional volumes per lane on most segments of San Marcos Boulevard, which are forecast to have daily operations at LOS D or better.

Table 5 and Table 6 summarize the recommended Horizon Year 2030 mitigation measures for the impacted intersection and roadway segment locations, respectively, as described above.

Table 5
Summary of Horizon Year 2030 Mitigation Measures - Study Intersections

Intersection	Recommended Mitigation Measure		
	2030 NP	2030 WP	
Mission Rd. / Knoll Rd.		X	NB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through / right-turn lane, and 1 right-turn lane.
San Marcos Blvd. / Rancho Santa Fe Rd.	X	X	WB: Provide a third left-turn lane.
San Marcos Blvd. / Las Posas Rd.	X	X	NB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through lane, and 1 shared through / right-turn lane. SB: Provide a second right-turn lane, and modify signal to provide a right-turn overlap phase. Convert NB and SB signal phasing to split phasing.
San Marcos Blvd. / Via Vera Cruz	X	X	SB: Restripe approach to provide 1 left-turn lane, 1 through lane, 1 shared through / right-turn lane. EB: Provide a dedicated right-turn lane.
San Marcos Blvd. / Bent Ave.	X	X	Convert NB and SB signal phasing to split phasing. NB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through lane, and 1 right-turn lane. SB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through lane, and 1 right-turn lane. WB: Provide a second left-turn lane.
San Marcos Blvd. / Twin Oaks Valley Rd.	X	X	NB: Modify signal to provide a right-turn overlap phase. SB: Provide a dedicated right-turn lane. WB: Provide a third left-turn lane.
Discovery St. / La Sombra Dr.	X	X	Install traffic signal. Provide split phasing at NB and SB approaches. NB: No changes to existing lane geometry. SB: Restripe approach to provide 1 left-turn lane and 1 shared left-turn / through lane. WB: Restripe approach to provide a dedicated left-turn lane, and modify signal to provide a right-turn overlap phase.
Barham Dr. / La Moree Rd.	X	X	NB: Modify signal to provide a right-turn overlap phase. SB: Provide 1 left-turn lane and 1 shared through/right-turn lane.
Barham Dr. / Woodland Pkwy.		X	WB: Modify signal to provide a right-turn overlap phase.
Twin Oaks Valley Rd. / Borden Rd.		X	EB: Modify signal to provide a right-turn overlap phase.
Twin Oaks Valley Rd. / SR-78 EB Ramps	X	X	EB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through / right-turn lane, and 1 right-turn lane. (Note: this improvement has already been implemented)

Note: 2030 NP = Year 2030 Without Project

2030 WP = Year 2030 With Project (Specific Plan Land Uses)

Table 6
Summary of Horizon Year 2030 Mitigation Measures - Study Roadway Segments

Roadway Segment		Recommended Mitigation Measure		
		2030 NP	2030 WP	
Discovery St., from San Marcos Blvd. to La Sombra Dr.		X	X	Improve to four-lane roadway.
Discovery St., from La Sombra Dr. to Via Vera Cruz		X	X	Improve to four-lane roadway.
Bent Ave.	From San Marcos Blvd. to Main St.	X	X	Improve to four-lane roadway.
	From Main St. to Discovery St.	X	X	Improve to two-lane roadway with TWLTL.
Westlake Dr., North of San Marcos Blvd. Bent Ave.			X	Improve to two-lane roadway with TWLTL.
Twin Oaks Valley Rd., from Richmar Ave. to San Marcos Blvd.		X	X	Improve intersection of Twin Valley Rd. / San Marcos Blvd. to provide LOS D or better peak hour operations (see Table 5 for recommended improvements at this intersection).

Note: 2030 NP = Year 2030 Without Project
2030 WP = Year 2030 With Project
TWLTL = Two-Way Left-Turn Lane

ON-SITE CIRCULATION AND TRAFFIC OPERATIONS ANALYSIS

The planned onsite roadway network for the UDSPA project site is depicted in Exhibit 6. The configuration of the East Side roadway network is similar to the network identified in the original UDSP with the following differences:

- Main Street (east-west spine) terminates just west of Campus Way at Redel Road instead of connecting to Industrial Street.
- Campus Way has been extended north of Main Street to connect to Carmel Street.
- Street.
- Street E (north-south street) has been added west of and parallel to Campus Way and this street extends from Barham Drive to new Street A north of Main Street.
- Street A has been added north of and parallel to Main Street and connects Street E to Campus Way.
- The configuration of the East Side roadway network is similar to the original UDSP in terms of the layout of Street B, Street D, and Street F. The southern terminus of Street B has been relocated to the east of Rush Drive due to topographic constraints. The configuration of Street C is somewhat different in that it loops back to Street D at Street F instead of continuing east to Street B. This change to Street C has also resulted in the elimination of the one-way couplet that was included in the original UDSP.

Urban Systems Associates (USA) completed the University District Specific Plan On-Site Traffic Study on November 27, 2013. A copy of the traffic study which analyzes traffic operations and roadway and intersection requirements for the planned UDSPA project site is attached as Appendix A.

The on-site traffic analysis includes assessments of:

- Project traffic generation;
- Project traffic distribution and assignment;
- Intersection and roadway segment traffic operations; and
- Intersection and roadway geometrics needed to accommodate project traffic circulation.

The USA traffic analysis included an evaluation of all on-site intersections as well as all of the primary access intersections around the perimeter of the project site. The on-site traffic analysis determined that all of the intersections and roadway segments would operate at Level of Service D or better during the more critical evening peak hour with traffic lane configurations depicted in Exhibit 6.

STRIPING PLAN EXHIBIT



MITIGATION PHASING ANALYSIS

The primary purpose of this analysis is to update the phasing requirements of the mitigation measures identified in the original EIR Traffic Impact Analysis for the 2030 scenario with the project as well as the proposed phasing needs of new planned roadways such as the Discovery Street extension from Craven Road to Twin Oaks Valley Road and the new Westlake Drive bridge crossing.

In the original EIR Traffic Impact Analysis, a five-year (year 2015) and ten-year (year 2020) analysis was performed to aid in the assessment of the timing of traffic mitigation measures. The use of development timing assumptions did not prove to be an effective method of establishing the timing of mitigation measures. In the updated analysis, the timing of mitigation measures is correlated to the number of vehicle trips that are generated by the project and how those trips would impact the need for the identified mitigation measures.

To update the phasing analysis of mitigation measure improvements, several factors were considered including:

- Current traffic volumes at the intersections that are impacted by the project.
- Estimated traffic associated with City of San Marcos approved or pending projects.
- The City's current Capital Improvement Program (CIP) transportation projects and the anticipated timing of those projects.
- Findings of the original mitigation phasing analysis that was performed for interim 5 and 10-year forecast periods (e.g. 2015 and 2020)
- Estimated traffic associated with the UDSPA

The phasing analysis also included a review of the updated 2030 traffic forecast from the SANDAG Series 11 North County Traffic Model. This model includes the most up to date information relative to the City's General Plan land use and circulation element. The current City Circulation Element plans to construct San Marcos Boulevard as a four-lane multi-way boulevard.

The traffic model was updated to include the most current information for key approved and pending specific plan projects in the study area vicinity. A brief summary of the area specific plan project assumptions is as follows:

- University District SP – Land use and trip generation was updated to reflect the currently proposed Specific Plan Amendment
- Creekside District SP - Land use and trip generation was updated to reflect the Final EIR Addendum dated 2011.
- Fenton Project SP – Land use is conservatively assumed to remain as primarily Business Park use as was assumed in the original traffic impact analysis.
- Kaiser Permanente Medical Center SP – Land use and trip generation is conservatively assumed to include a new hospital facility.
- Rancho Coronado SP – Land use and trip generation assumes the changes proposed in the recent Specific Plan Amendment.

For reference purposes, the current transportation projects included in the City's CIP are summarized in Table 7.

The results of the mitigation phasing analysis for mitigation measures at study area intersections are summarized in Table 8. The analysis has determined the maximum level of project trip generation that can occur before each mitigation measure must be constructed. In all cases, the project trip generation threshold applies to the number of trips generated during the more critical p.m. peak hour. The threshold is considered to be reached if either the inbound or outbound threshold is achieved during the p.m. peak hour.

Also noted, is whether there is a CIP transportation project that is related to the mitigation measure and the currently programmed timing for the transportation project. In some cases, the UDSPA mitigation measure would be a component of the planned transportation project and coordination would be required. In these cases, the schedule of the CIP project would dictate the timing of the mitigation measure implementation. In other cases, the completion of the CIP transportation project would influence travel patterns in a manner that would accelerate the need for the mitigation measure. In these cases, the schedule of the CIP project would also dictate the need to implement the mitigation measure and this may be in advance of reaching the project trip generation threshold identified. While the timing of the related CIP Transportation project could be in advance of reaching the project trip generation threshold identified herein, the project would need to participate on a "fair share" basis to the cost of the mitigation measure at the time of the CIP project construction.

The results of the mitigation phasing analysis for mitigation measures on study area roadway segments are summarized in Table 9. It should be noted that the extension of Discovery Street from Rush Street to Bent Street occurs at the first trip generation threshold level (760 total, 350 inbound, 410 outbound p.m. peak hour project trips) and this improvement is related to the CIP transportation construction project identified for Discovery Street between 2017 and 2019. The updated analysis indicates that Discovery should be constructed as a four-lane divided roadway from Bent to Rush Street and as a six-lane divided roadway from Rush Street to Discovery. The extension of Grand Avenue to Discovery could be delayed until the project meets the second trip generation threshold level (1,760 total, 795 inbound, 915 outbound p.m. peak hour project trips).

Table 7
City of San Marcos Capital Improvement Program Transportation Projects

ID#-Roadway Name	From	To	Improvement	Start of Construction (Year)	Project Open to Traffic (Year)
SM1--South Santa Fe Ave	Bosstick Blvd	Smilax Rd	Realign & Signalize the Intersection Interchange Improvements w/ Barham	2017	2018
SM2--Woodland Pkwy	La Moree Rd	Rancheros Blvd	Widening	2017	2019
SM3--Discovery St	Via Vera Cruz Rd	Bent Ave/Craven Rd	Widen Roadway	2017	2019
SM4--Via Vera Cruz Rd	San Marcos Blvd	Discovery St	Street Improvements	2017	2019
SM5--Discovery St	Craven Rd	Twin Oaks Valley Rd	Street Improvements	2017	2019
SM6--Barham Dr	Twin Oaks Valley Rd	La Moree Rd	Widen Roadway	2018	2019
SM7--Creeside Dr	Via Vera Cruz Rd	Grand Ave	Street Improvements	2018	2019
SM8--Borden Rd	Mulberry Rd	Vineyard Rd	Street Reconstruction	2018	2019
SM9--Borden Rd	Wulff St	Redhill Ln	Street Widening	2018	2019
SM10--E. La Moree Rd	Williamsburg Dev.	Sandy Ln	Street Widening	2018	2019
SM11--Twin Oaks Valley Rd	Buena Creek Rd	Sycamore Dr	Street Widening	2019	2020
SM12--Twin Oaks Valley Rd	La Cienega Rd	Cassou Rd	Street Improvements	2019	2020
SM13--Twin Oaks Valley Rd	Cassou Rd	Buena Creek Rd	Street Improvements	2019	2020
SM14--Richland Rd	Borden Rd	Rock Springs Rd	Street Improvements	2020	2021
SM15--Rancho Santa Fe					
SM16--Interchange	& SR78	& SR78	Interchange Improvements	2020	2021
SM17--Rancho Santa Fe Rd	South Santa Fe Rd	Grand Ave	Street Improvements	2020	2021
SM18--Richmar Ave	Twin Oaks Valley Rd	Woodward St	Street Improvements	2020	2021
SM19--San Marcos Blvd	Knoll Rd	Pico Ave	Street Widening	2020	2021
SM20--Rancho Santa Fe Rd	Grand Ave	San Marcos Blvd Palomar College	Street Widening	2020	2021
SM21--Borden Rd	Via Barquero	Entrance	Street Widening	2020	2021
SM22--Mulberry Dr	Woodward St	Olive St	Street Widening	2020	2021
SM23--San Marcos Blvd	Discovery Street	Bent Ave	Street Improvements	2025	2027

Table 8
Summary of Mitigation Measure Phasing Requirements - Intersection Improvements

Mitigation Measure Is Required Prior to Project Trip Threshold Being Exceeded Or Completion of Related CIP Project- Whichever Occurs First			
Intersection	Project Trip Generation Threshold	Required Coordination w/ CIP Project Construction Period	Recommended Mitigation Measure
Twin Oaks Valley Rd. / SR-78 EB Ramps	760 PM Peak Hr. Inbound: 350 Outbound: 410		EB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through / right-turn lane, and 1 right-turn lane. (Note: This improvement has already been implemented)
San Marcos Blvd. / Via Vera Cruz	760 PM Peak Hr. Inbound: 350 Outbound: 410	SM4 (Est. 2017 – 2019)	SB: Restripe approach to provide 1 left-turn lane, 1 through lane, 1 shared through / right-turn lane. EB: Provide a dedicated right-turn lane.
San Marcos Blvd. / Bent Ave.	760 PM Peak Hr. Inbound: 350 Outbound: 410	SM3 & SM5 (Est. 2017 – 2019)	Convert NB and SB signal phasing to split phasing. NB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through lane, and 1 right-turn lane. SB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through lane, and 1 right-turn lane. WB: Provide a second left-turn lane.
San Marcos Blvd. / Las Posas Rd.	760 PM Peak Hr. Inbound: 350 Outbound: 410		Convert NB and SB signal phasing to split phasing. NB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through lane, and 1 shared through / right-turn lane. SB: Provide a second right-turn lane, and modify signal to provide a right-turn overlap phase.
Barham Dr. / La Moree Rd.	760 PM Peak Hr. Inbound: 350 Outbound: 410	SM6 (Est. 2018 – 2019)	NB: Modify signal to provide a right-turn overlap phase. SB: Provide 1 left-turn lane and 1 shared through/right-turn lane.
Discovery St. / La Sombra Dr.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM3 & SM5 (Est. 2017 – 2019)	Install traffic signal. Provide split phasing at NB and SB approaches. NB: No changes to existing lane geometry. SB: Restripe approach to provide 1 left-turn lane and 1 shared left-turn / through lane. WB: Restripe approach to provide a dedicated left-turn lane, and modify signal to provide a right-turn overlap phase.
Barham Dr. / Woodland Pkwy.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM2 (Est. 2017 – 2019)	WB: Modify signal to provide a right-turn overlap phase.

Table 8 (Continued)
Summary of Mitigation Measure Phasing Requirements - Intersection Improvements

Mitigation Measure Is Required Prior to Project Trip Threshold Being Exceeded Or Completion of Related CIP Project- Whichever Occurs First			
Intersection	Project Trip Generation Threshold	Required Coordination w/ CIP Project Construction Period	Recommended Mitigation Measure
Twin Oaks Valley Rd. / Borden Rd.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM8 & SM9 (Est. 2018 – 2019)	EB: Modify signal to provide a right-turn overlap phase.
San Marcos Blvd. / Grand Ave.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM5 (Est. 2017 – 2019)	NB: Convert signal phasing to protected left-turns. Restripe approach to provide two left-turn lanes, one through lane, and one right-turn lane. SB: Convert signal phasing to protected left-turns. Restripe approach to provide two left-turn lanes, one through lane, and one shared through/right-turn lane. EB: Reduce existing dual left-turn lane to a single left-turn lane. Restripe approach to provide three through lanes and one shared through/right-turn lane. (Note: Some of these improvements have already been implemented)
San Marcos Blvd. / Twin Oaks Valley Rd.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM19 (Est. 2020 – 2021)	NB: Modify signal to provide a right-turn overlap phase. SB: Provide a dedicated right-turn lane. WB: Provide a third left-turn lane.
San Marcos Blvd. / Rancho Santa Fe Rd	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM20 (Est. 2020 – 2021)	WB: Provide a third left-turn lane.
Mission Rd. / Knoll Rd.	2,855 PM Peak Hr. Inbound: 795 Outbound: 915		NB: Restripe approach to provide 1 left-turn lane, 1 shared left-turn / through / right-turn lane, and 1 right-turn lane.

Table 9
Summary of Mitigation Measure Phasing Requirements - Roadway Improvements

Mitigation Measure Is Required Prior to Project Trip Threshold Being Exceeded Or Completion of Related CIP Project- Whichever Occurs First			
Roadway Segment	Project Trip Generation Threshold	Required Coordination w/ CIP Project Construction Period	Recommended Mitigation Measure
Bent Ave. from San Marcos Blvd. to Main St.	760 PM Peak Hr. Inbound: 350 Outbound: 410	SM5 (Est. 2017 -2019)	Improve to four-lane roadway
Bent Ave. from Main St. to Discovery St.	760 PM Peak Hr. Inbound: 350 Outbound: 410	SM5 (Est. 2017 -2019)	Improve to two-lane roadway with TWLTL.
Discovery St., from San Marcos Blvd. to La Sombra Dr.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM3 & SM5 (Est. 2017 -2019)	Improve to four-lane roadway
Discovery St., from La Sombra Dr. to Via Vera Cruz	1,760 PM Peak Hr. Inbound: 795 Outbound: 915	SM3 & SM5 (Est. 2017 -2019)	Improve to four-lane roadway
Twin Oaks Valley Rd., from Richmar Ave. to San Marcos Blvd.	1,760 PM Peak Hr. Inbound: 795 Outbound: 915		Improve intersection of Twin Valley Rd. / San Marcos Blvd. to provide LOS D or better peak hour operations (see Table 5 for recommended improvements at this intersection).
Westlake Dr. Bridge from San Marcos Blvd. to Project Street D on West Side of Project	2,855 PM Peak Hr. Inbound: 795 Outbound: 915		Construct minimum two-lane bridge. Monitor directional peak hour volume and widen to four lanes if single direction volume reaches 800 vehicles per hour prior to project build-out.
Westlake Dr., North of San Marcos Blvd.	2,855 PM Peak Hr. Inbound: 795 Outbound: 915		Improve to two-lane roadway with TWLTL.

APPENDIX A

University District Specific Plan On-Site Traffic Study

Urban Systems Associates



E-MEMO

E-Mail: ▼

ATTN: Paul Metcalf – Metcalf Development & Consulting pmdevcom@sbcglobal.net

FROM: Andrew P. Schlaefli, PE, TE **TOTAL PAGES (Incl. Cover):** 6 + Attachments

DATE: April 22, 2014 **TIME:** 9:30:17 AM **JOB NUMBER:** 000406

SUBJECT: University District Specific Plan Amendment On-Site Traffic Study

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As requested, we have prepared a comprehensive on-site traffic analysis for the University District Specific Plan Amendment (UDSPA) in San Marcos. The purpose of this analysis is to determine the number of travel lanes on-site, evaluate traffic control at intersections on-site, and evaluate traffic operations on-site. This analysis assumed specific land uses and access points, so a block by block analysis will be completed at a later date and compared with the results to establish conformance or identify changes (refinements) to this study. When the analysis refers to the “East Side” or “West Side”, this notes the assumed project land uses and internal streets on the east side or west side of Twin Oaks Valley Road. Also note this analysis is based on the “With Target” project build-out PM peak hour volumes (highest peak hour) for both the east and west side to be conservative. To be consistent with the approved traffic study and EIR, Year 2030 traffic volumes and project distribution were used as a basis for external traffic. **Tables A & B** include a Year 2030 with Project intersection level of service summary on the east and west side respectively. **Table C** includes a Year 2030 with project street segment summary on the east and west side. As shown, intersections and street segments are projected to operate at level of service D or better.

TRIP GENERATION

East Side:

Trip generation tables were prepared on a block by block basis as shown in **Attachment 1**, see Table A & Table B. Table A includes the “With Target” option and Table B includes the “No Target Option”. Trip generation rates for land uses assumed in Table A and Table B are consistent with the approved UDSP Traffic Study prepared by RBF Consulting. On the east side, Table A shows the “With Target” option is expected to generate 67,455 average daily trips (ADT) with 3,386 AM peak hour trips and 6,775 PM peak hour trips. With a 10% mixed-use reduction and 5% transit reduction, the “With Target” option would generate 57,337 ADT with 2,878 AM peak hour trips and 5,759 PM peak hour trips.

The "No Target" option is expected to generate 66,880 ADT with 3,450 AM peak hour trips and 6,744 PM peak hour trips. With a 10% mixed-use reduction and 5% transit reduction, the "No Target" option would generate 56,848 ADT with 2,933 AM peak hour trips and 5,733 PM peak hour trips.

The "With Target" option generates more ADT's and PM trips than the "No Target" option, therefore, to be conservative, the east side analysis is based on the "With Target" trip generation table. Also, to be ultra conservative with this analysis, we used total peak traffic volumes not those reduced by 10% (mixed-use) and 5% (transit).

West Side:

A trip generation table for the assumed land uses block by block on the west side is shown in Table C of **Attachment 1**. The trip generation rates used in Table C are consistent with the approved UDSP Traffic Study. As shown, the west side is projected to generate 39,220 ADT with 2,330 AM peak hour trips and 3,473 PM peak hour trips. With a 10% mixed-use reduction and 5% transit reduction, the west side would generate 33,337 ADT with 1,980 AM peak hour trips and 2,952 PM peak hour trips.

A comparison table is also provided in **Attachment 1** which shows the west side, east side, and total project trip generation compared to the approved UDSP traffic study. As shown, the west side ADT is reduced by 39% from the approved UDSP traffic study and the east side ADT is reduced by 4%. The total project (east & west side) ADT is reduced by 21% with a total AM reduction of 30% and PM reduction of 26%. On the west side as with the east side, no mixed-use or transit reductions were used for this analysis so that results are ultra conservative.

TRIP DISTRIBUTION PERCENTAGES ON-SITE

East Side:

Each block was evaluated separately and on-site project traffic was distributed to major roadways such as Barham Drive and Twin Oaks Valley Road. As shown in **Attachment 2**, each access point on the east side distributes traffic and is assigned a percentage. All access points on the east side equal 100% of project traffic. Adjustments were made to the distribution access points based on review by RBF Consulting and City staff. For example, 12% was distributed to Carmel Street but was adjusted to 9%. Traffic at North City Drive to/from the west side across Twin Oaks Valley Road was adjusted from 10% to 14%.

As shown in **Attachment 2**, traffic from each block was distributed separately to Carmel Street, Barham Drive, and Twin Oaks Valley Road based on the assumed road network and access points to each block. Traffic distribution from each block on the east side was reviewed and approved by RBF and City transportation staff. The distribution percentages at each access point, when added together, match the overall assigned cordon percentages.

West Side:

Each block on the west side was evaluated separately and on-site project traffic was distributed to major roadways such as Discovery and Twin Oaks Valley Road. Project traffic is also distributed to the future bridge across SR-78. As shown in **Attachment 3**, traffic is distributed to each access point. Adjustments to the

distribution were made as a result of review by RBF and City staff. The circled percentages shown on the plan are the approved percentages at project access points.

Traffic from each block was distributed separately to Discovery, Twin Oaks Valley Road, and the bridge segment over SR-78, see B-1 through B-9 in **Attachment 3**. As previously mentioned, distribution from each block on the west side was reviewed and approved by RBF and City staff. In addition, the external distribution of project traffic to Twin Oaks Valley Road, Discovery, and Barham Drive is consistent with the approved EIR.

AVERAGE DAILY TRAFFIC VOLUMES ON-SITE

East Side:

Using the east side "With Target" trip generation table (Table A) and distribution percentages to streets on-site, average daily traffic volumes were calculated for each on-site street. The results of this effort can be found in **Attachment 4**. As shown, approximately 24,688 ADT is expected on North City Drive on the east side. Four lanes are proposed on North City Drive. A four lane Secondary Arterial has a LOS E threshold of 30,000 ADT per the SANTEC/ITE Guidelines. Therefore, a four lane facility on North City Drive should be adequate for the expected capacity at project build-out. Subsequently, roundabouts were designed rather than signalized intersections on the east side, therefore, a new ADT figure was never requested or completed. The roundabout concept is shown on sheet 2 of **Attachment 4**.

West Side:

Using the west side trip generation table (Table C) and distribution percentages to streets on-site, average daily traffic volumes were calculated for each on-site street. Refer to sheet 3 of **Attachment 4**. As shown, a four lane roadway is proposed at the main entrance off Twin Oaks Valley Road to accommodate the estimated 13,727 ADT on the west side. The remaining streets on the west side can be served by two lane roadways based on the estimated traffic volumes in the build-out scenario.

PM PEAK HOUR TRAFFIC VOLUMES ON-SITE

East Side:

PM peak hour turn volumes were derived by multiplying the PM peak hour in/out split volumes with the distribution percentages. The combined PM peak hour volumes on the east side at each intersection are provided in **Attachment 5**. For a block by block evaluation of the peak hour turn volumes, refer to **Attachment 2**. Horizon Year 2030 PM peak hour volumes assumed along Barham Drive and Twin Oaks Valley Road in the through movements were taken from RBF's approved UDSP Traffic Study, see sheet D1 on **Attachment 5**.

West Side:

PM peak hour turn volumes were derived by multiplying the PM peak hour in/out split volumes with the distribution percentages. A block by block distribution analysis was used to determine the assumed route to Twin Oaks Valley Road and Discovery. The results of this effort can be found on sheets B1 through B9 in **Attachment 5**. Also included is the total project PM peak hour turn volumes at each roundabout on the west side, see sheet C1 and C2. Horizon Year 2030 PM peak hour volumes assumed on Discovery in the through movements were taken from RBF's approved UDSP Traffic Study, see sheet D1 on **Attachment 5**.

INTERSECTION LEVELS OF SERVICE ON-SITE

East Side:

Each intersection on-site was analyzed using the project build-out PM peak hour volumes. Access points were also analyzed such as Twin Oaks Valley Road at North City Drive to determine if acceptable levels of service can be achieved. As shown on Table A of **Attachment 6**, all signalized intersections, two-way / all-way stop controlled intersections are projected to operate at acceptable levels of service D or better. In addition, right in / right out access at Twin Oaks Valley Road / Carmel Street and Barham Drive / Redel Road was analyzed and found to operate at acceptable levels of service B or better.

Subsequently, roundabouts have been evaluated on the east side. The first intersection to the east of Twin Oaks Valley Road (Main Street / Street B), a two lane roundabout with a 150 foot diameter has been analyzed and would operate at an acceptable level of service A. **Attachment 6** includes the Synchro worksheets for stop controlled intersections as well as the roundabout worksheets for the east side analysis. The analysis of roundabouts on the east side with the exception of the two-lane roundabout closest to the main entrance has not been requested or completed.

West Side:

One lane roundabouts are proposed on the west side. The analysis show one lane roundabouts would operate at acceptable levels of service, see Table B in **Attachment 6**. At the first roundabout closest to Twin Oaks Valley Road, by-pass lanes were considered due to the high right turn volumes and large queues. However, by-pass lanes were not recommended for bicycle and pedestrian safety. Queues were reduced at the roundabout by increasing the diameter of the roundabout from 100 feet to 150 feet.

Due to the close proximity of Rush Drive to project access at Discovery / Street A, this analysis has evaluated the level of service, lane geometry and queuing between the two closely spaced intersections. Three options were considered to accommodate the high volume of westbound left turns onto Rush Drive from Discovery. Option A included a single westbound left turn lane at Rush/Discovery that would continue through the Discovery / Street A intersection to provide additional storage for queuing. The City did not agree with this approach due to traffic possibly blocking other movements at the Discovery / Street A intersection although adequate striping and signing could be provided. Option B included assumed a right in /right out only in the northbound direction at Rush Drive / Discovery. This option would restrict left turns onto Rush and would cause traffic to use the Shopping Center Driveway (opposite of Street A) to access Rush Drive as a cut-through route and/or cause u-turns further west. Therefore, Option B is not recommended. As shown in **Attachment 6**, Option C provides dual westbound left turn pockets onto Rush Drive. The dual lefts would allow for more storage capacity and allow the intersection to operate more efficiently. Both intersections are projected to

operate at LOS C. A conceptual striping layout of Option C is included in **Attachment 6**. Option C is recommended based on the projected volumes in the future and no movements are restricted at either intersection.

OPERATIONS ANALYSIS ON-SITE

East Side:

An operations analysis was completed at each intersection to evaluate intersection control, queuing and determine turn pocket storage lengths. Table B in **Attachment 7** provides for all thirteen (13) intersections evaluated, the 95th percentile queue and proposed storage length for each turn movement on every approach. As shown in Table B, the proposed storage lengths at each intersection provides adequate storage for the expected queue. Proposed lane configurations used in the analysis are shown on sheet B3 in **Attachment 7**.

West Side:

An operations analysis was completed at three (3) roundabouts on-site and three (3) signalized intersections on Discovery. Table C in **Attachment 7** provides the 95th percentile queue and storage length for each turn lane on each approach.

On Table C, two queues exceed the proposed storage lengths. The roundabout at Street A/Street B (Roundabout closest to Twin Oaks Valley Rd.) reports a queue (313 feet) longer than the storage length (300 feet) for the westbound approach. In this analysis, the westbound approach serves all traffic entering/exiting Block 2 which represents a worst case analysis. If all traffic from Block 2 uses this approach, then storage would need to be extended by about 25 feet.

The other queue on Table C that exceeds the proposed storage length is eastbound through move at Discovery / Street A. Additional storage for the 356 foot queue can be accommodated west of the intersection at Rush Drive on Discovery Drive. Adequate storage is provided for the remaining queues listed in Table C.

TWIN OAKS VALLEY ROAD ANALYSIS

Although the overall project traffic was reduced by 21%, the City requested we analyze a few offsite intersections on Twin Oaks Valley Road such as the SR-78 Westbound ramps to Barham/Discovery. In **Attachment 8**, all five (5) intersections along Twin Oaks Valley Road from SR-78 WB ramps to Barham/Discovery operate at acceptable levels of service D or better. These results are consistent with the approved UDSP/RBF traffic study.

BARHAM DRIVE & DISCOVERY ROAD

Barham Drive along the project frontage is classified as a six lane Prime Arterial according to the approved UDSP traffic study prepared by RBF and San Marcos's Circulation Element.

Discovery Road west of Twin Oaks Valley Road along the project frontage is classified as a six lane Prime Arterial per UDSP traffic study and San Marcos's Circulation Element. As shown on the striping concept in **Attachment 9**, six lanes are proposed from Twin Oaks Valle Road to Rush Drive. Just west of Rush Drive past the intersection on Discovery, three lanes transitions to two lanes in the westbound direction. Four lanes are proposed on Discovery from Rush Drive to Street B based on project traffic. When future projects are developed, a six lane roadway may be necessary. Since the proposed right-of-way on Discovery provides for six lanes, the wide median can be used for additional lanes in the future.

CONCLUSIONS

As previously mentioned, this analysis was prepared so that a block by block analysis can be completed and results can be compared with at a later date to establish conformance or identify refinements to this study. The analysis confirms that street segments and intersections on-site are projected to operate at level of service D or better. This comprehensive on-site analysis has been reviewed and approved by RBF Consulting and City transportation staff.

Please let us know if you have any questions or you need additional information.

Cc: Gary Levitt
Mike McDonald

TABLE A

**Year 2030 with Project Intersection Levels of Service
University District Specific Plan Amendment**

East Side Analysis

Number	Intersection	Control	PM Peak Hour	
			Delay	LOS
1	Twin Oaks Valley Road / Carmel Street	Right In / Right Out	0.46*	A*
2	Twin Oaks Valley Road / North City Drive	Signalized (With U-turns)	42.3	D
3	Main Street / Street "B"	Signalized	34.1	C
4	Barham Drive / Street "B"	Signalized	13.1	B
5	Carmel Street / Street "C"	Two-Way Stop	4.8	A
6	Street "A" / Street "C"	Two-Way Stop	13.2	B
7	Street "A" / Campus Way	Two-Way Stop	4.2	A
8	Main Street / Campus Way	Signalized	30.6	C
9	Barham Dr. / Campus Way	Signalized	31.2	C
10	Main Street / Redel Road	All Way Stop	9.9	A
11	Barham Drive / Redel Road	Right In / Right Out	10.9	B
12	Carmel Street / Industrial Street	Two-Way Stop	4.4	A
13	Barham Dr. / Industrial Street	Signalized	10.2	B
14	Twin Oaks Valley Road / SR-78 WB Ramps	Signalized	17.2	B
15	Twin Oaks Valley Road / SR-78 EB Ramps	Signalized	28.3	C
16	Twin Oaks Valley Road / Barham Dr/Discovery	Signalized	45.3	D

Notes:

LOS = Level of Service

* Intersection Capacity Utilization Calculation

Cycle Length analyzed on Twin Oaks Valley Road is 120 seconds.

TABLE B

**Year 2030 with Project Intersection Levels of Service
University District Specific Plan Amendment**

West Side Analysis

Number	Intersection	Control	PM Peak Hour	
			Delay	LOS
1	Street "B" / Street "C"	1 Lane Roundabout	2.5	A
2	Street "C" / Street "B"	1 Lane Roundabout	2.9	A
3	Street "A" / Street "B"	1 Lane Roundabout	10.6	B
4	Discovery / Street "B"	Signalized	19.3	B
5	Discovery / Rush Dr.	Signalized	20.7	C
6	Discovery / Street "A"	Signalized	12.7	B

Notes:

LOS = Level of Service

Cycle Length analyzed on Discovery is 90 seconds.

TABLE C

**University District Specific Plan Amendment
Year 2030 With Project Street Segment Analysis**

EAST SIDE

Road	Segment	Functional Classification (# of Lanes)	LOS E Capacity	Volume	V/C	LOS
North City Drive (East)	Twin Oaks Valley Road to Block 6 & 7 Access	Secondary Arterial (4)	30,000	24,688	0.82	D
Street "A"	Block 6 & 7 Access to Campus Way	Secondary Arterial (4)	30,000	14,908	0.50	C
Street "A"	Campus Way to Redel Road	Secondary Arterial (4)	30,000	11,804	0.39	B
Street "E"	Main Street to Barham Drive	Collector (2)	15,000	7,015	0.47	C
Redel Road	Carmel Street to Street "A"	Collector (2)	15,000	8,770	0.58	C
Redel Road	Street "A" to Main Street	Collector (2)	15,000	1,349	0.09	A
Redel Road	Main Street to Barham Drive	Collector (2)	15,000	2,698	0.18	A
Industrial Street	Carmel Street to Barham Drive	Collector (2)	15,000	7,420	0.49	C
Campus Way	Street "A" to Main Street	Collector (2)	15,000	12,276	0.82	D
Campus Way	Main Street to Barham Drive	Collector (2)	15,000	11,736	0.78	D
Main Street	North City Drive to Street "B"	Collector (2)	15,000	12,344	0.82	D
Main Street	Street "B" to Campus Way	Collector (2)	15,000	10,118	0.67	D
Main Street	Campus Way to Redel Road	Collector (2)	15,000	2,833	0.19	A

WEST SIDE

Road	Segment	Functional Classification	LOS E Capacity	Volume	V/C	LOS
Street "B"	Twin Oaks Valley Road to Street "D"	Secondary Arterial (4)	30,000	13,727	0.46	B
Street "B"	Street "D" to Discovery Street	Collector (2)	15,000	8,628	0.58	C
Street "C"	West of Street "D"	Collector (2)	15,000	5,491	0.37	B
Street "C"	Street "D" to Street "F"	Collector (2)	15,000	4,314	0.29	A
Street "D"	Discovery Street to Street "C"	Collector (2)	15,000	5,491	0.37	B
Street "D"	Street "C" to Street "F"	Collector (2)	15,000	5,490	0.37	B
Street "D"	Street "F" to Street "B"	Collector (2)	15,000	12,158	0.81	D
Street "F"	North of Street "D"	Collector (2)	15,000	9,805	0.65	B

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

University District Specific Plan

San Marcos

On – Site Traffic Study

ATTACHMENT 1

UNIVERSITY DISTRICT SPECIFIC PLAN (SAN MARCOS) TRIP GENERATION COMPARISON TABLE

	ADT	AM Trips	AM In	AM Out	PM Trips	PM In	PM out
West of Twin Oaks Valley Road							
University District Specific Plan Trip Generation for Horizon Year 2030 (Approved Traffic Study in EIR)	64,146	4,365	2,695	1,670	6,639	2,989	3,649
Revised Project for Horizon Year 2030	39,220	2,330	1,228	1,102	3,473	1,645	1,828
TRIP REDUCTION	24,926	2,035	1,467	568	3,166	1,344	1,821
Difference in %	39%	47%	54%	34%	48%	45%	50%
East of Twin Oaks Valley Road							
University District Specific Plan Trip Generation for Horizon Year 2030 (Approved Traffic Study in EIR)	70,550	3,779	2,216	1,563	7,164	3,427	3,737
Revised Project for Horizon Year 2030 (With Target Option)	67,455	3,386	1,952	1,434	6,775	3,331	3,444
TRIP REDUCTION	3,095	393	264	129	389	96	293
Difference in %	4%	10%	12%	8%	5%	3%	8%
TOTAL PROJECT (East & West Side of Twin Oaks Valley Road)							
University District Specific Plan Trip Generation for Horizon Year 2030 (Approved Traffic Study in EIR)	134,696	8,144	4,911	3,233	13,803	6,416	7,386
Revised Project for Horizon Year 2030	106,675	5,716	3,180	2,536	10,248	4,976	5,272
TRIP REDUCTION	28,021	2,428	1,731	697	3,555	1,440	2,114
Difference in %	21%	30%	35%	22%	26%	22%	29%

NOTE: ADT's and peak hour trips in this table do not include any mixed-use or transit reductions.

TABLE A

Table A
Project Trip Generation
University Place San Marcos
East Side - With Target Option

Use	Amount	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	#	In/Out	In	Out	%	#	In/Out	In	Out
Block 1													
Mixed-Use Community Comercial	150,000 <i>SF</i>	80 /1000 SF	12,000	4%	480	6 : 4	288	192	10%	1,200	5 : 5	600	600
Block 2													
Mixed-Use Residential	30 <i>DU</i>	6 / DU	180	8%	14	2 : 8	3	12	9%	16	7 : 3	11	5
Mixed-Use Community Comercial	30,000 <i>SF</i>	80 /1000 SF	2,400	4%	96	6 : 4	58	38	10%	240	5 : 5	120	120
<i>Block 2 Sub-Total</i>			2,580		110		60	50		256		131	125
Block 3													
Mixed-Use Residential	50 <i>DU</i>	6 / DU	300	8%	24	2 : 8	5	19	9%	27	7 : 3	19	8
Student Housing	40 <i>DU</i>	6 / DU	240	8%	19	2 : 8	4	15	9%	22	7 : 3	15	6
Mixed-Use Community Comercial	70,000 <i>SF</i>	80 /1000 SF	5,600	4%	224	6 : 4	134	90	10%	560	5 : 5	280	280
<i>Block 3 Sub-Total</i>			6,140		267		143	124		609		314	295
Block 4													
Mixed-Use Residential	50 <i>DU</i>	6 / DU	300	8%	24	2 : 8	5	19	9%	27	7 : 3	19	8
Student Housing	40 <i>DU</i>	6 / DU	240	8%	19	2 : 8	4	15	9%	22	7 : 3	15	6
Medical Office	25,000 <i>SF</i>	50 /1000 SF	1,250	6%	75	8 : 2	60	15	11%	138	3 : 7	41	96
Mixed-Use Community Comercial	70,000 <i>SF</i>	80 /1000 SF	5,600	4%	224	6 : 4	134	90	10%	560	5 : 5	280	280
<i>Block 4 Sub-Total</i>			7,390		342		203	139		746		355	391
Block 5													
Mixed-Use Residential	80 <i>DU</i>	6 / DU	480	8%	38	2 : 8	8	31	9%	43	7 : 3	30	13
Hotel	250 <i>RM</i>	10 / Room	2,500	6%	150	6 : 4	90	60	8%	200	6 : 4	120	80
General Office	60,000 <i>SF</i>	17 /1000 SF	1,020	13%	133	9 : 1	119	13	14%	143	2 : 8	29	114
Medical Office	20,000 <i>SF</i>	50 /1000 SF	1,000	6%	60	8 : 2	48	12	11%	110	3 : 7	33	77
Mixed-Use Community Comercial	30,000 <i>SF</i>	80 /1000 SF	2,400	4%	96	6 : 4	58	38	10%	240	5 : 5	120	120
<i>Block 5 Sub-Total</i>			7,400		477		323	154		736		332	404

TABLE A

Block 6													
General Office	25,000 SF	17 /1000 SF	425	13%	55	9 : 1	50	6	14%	60	2 : 8	12	48
Medical Office	20,000 SF	50 /1000 SF	1,000	6%	60	8 : 2	48	12	11%	110	3 : 7	33	77
Mixed-Use Community Comercial	50,000 SF	80 /1000 SF	4,000	4%	160	6 : 4	96	64	10%	400	5 : 5	200	200
<i>Block 6 Sub-Total</i>			5,425		275		194	82		570		245	325
Block 7													
Mixed-Use Residential	130 DU	6 / DU	780	8%	62	2 : 8	12	50	9%	70	7 : 3	49	21
General Office	40,000 SF	17 /1000 SF	680	13%	88	9 : 1	80	9	14%	95	2 : 8	19	76
Medical Office	20,000 SF	50 /1000 SF	1,000	6%	60	8 : 2	48	12	11%	110	3 : 7	33	77
Mixed-Use Community Comercial	50,000 SF	80 /1000 SF	4,000	4%	160	6 : 4	96	64	10%	400	5 : 5	200	200
<i>Block 7 Sub-Total</i>			6,460		371		236	135		675		301	374
Adaptive Re-Use Area													
Mixed-Use Residential	110 DU	6 / DU	660	8%	53	2 : 8	11	42	9%	59	7 : 3	42	18
Student Housing	546 DU	6 / DU	3,276	8%	262	2 : 8	52	210	9%	295	7 : 3	206	88
General Office	40,000 SF	17 /1000 SF	680	13%	88	9 : 1	80	9	14%	95	2 : 8	19	76
Mixed-Use Community Comercial	156,000 SF	80 /1000 SF	12,480	4%	499	6 : 4	300	200	10%	1,248	5 : 5	624	624
<i>Adaptive Re-Use Area Sub-Total</i>			17,096		902		442	460		1,697		891	806
Quad													
Student Housing	174 DU	6 / DU	1,044	8%	84	2 : 8	17	67	9%	94	7 : 3	66	28
Mixed-Use Community Comercial	24,000 SF	80 /1000 SF	1,920	4%	77	6 : 4	46	31	10%	192	5 : 5	96	96
<i>Quad Sub-Total</i>			2,964		160		63	98		286		162	124
SUB-TOTAL													
			67,455		3,386		1,952	1,434		6,775		3,331	3,444
10% Mixed-Use Reduction			6,746		339		195	143		678		333	344
5% Transit Reduction			3,373		169		98	72		339		167	172
NET NEW TOTAL PROJECT TRIPS			57,337		2,878		1,659	1,219		5,759		2,832	2,927

TABLE B

Table B
Project Trip Generation
University Place San Marcos
East Side - No Target Option

Use	Amount	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	#	In/Out	In	Out	%	#	In/Out	In	Out
Block 1A													
Mixed-Use Residential	80 DU	6 / DU	480	8%	38	2 : 8	8	31	9%	43	7 : 3	30	13
Mixed-Use Community Comercial	120,000 SF	80 /1000 SF	9,600	4%	384	6 : 4	230	154	10%	960	5 : 5	480	480
General Office	35,000 SF	17 /1000 SF	595	13%	77	9 : 1	70	8	14%	83	2 : 8	17	67
Medical Office	15,000 SF	50 /1000 SF	750	6%	45	8 : 2	36	9	11%	83	3 : 7	25	58
Block 1A Sub-Total			11,425		545		344	201		1,169		552	617
Block 2													
Mixed-Use Residential	30 DU	6 / DU	180	8%	14	2 : 8	3	12	9%	16	7 : 3	11	5
Mixed-Use Community Comercial	30,000 SF	80 /1000 SF	2,400	4%	96	6 : 4	58	38	10%	240	5 : 5	120	120
Block 2 Sub-Total			2,580		110		60	50		256		131	125
Block 3													
Mixed-Use Residential	50 DU	6 / DU	300	8%	24	2 : 8	5	19	9%	27	7 : 3	19	8
Student Housing	40 DU	6 / DU	240	8%	19	2 : 8	4	15	9%	22	7 : 3	15	6
Mixed-Use Community Comercial	70,000 SF	80 /1000 SF	5,600	4%	224	6 : 4	134	90	10%	560	5 : 5	280	280
Block 3 Sub-Total			6,140		267		143	124		609		314	295
Block 4													
Mixed-Use Residential	50 DU	6 / DU	300	8%	24	2 : 8	5	19	9%	27	7 : 3	19	8
Student Housing	40 DU	6 / DU	240	8%	19	2 : 8	4	15	9%	22	7 : 3	15	6
Medical Office	25,000 SF	50 /1000 SF	1,250	6%	75	8 : 2	60	15	11%	138	3 : 7	41	96
Mixed-Use Community Comercial	70,000 SF	80 /1000 SF	5,600	4%	224	6 : 4	134	90	10%	560	5 : 5	280	280
Block 4 Sub-Total			7,390		342		203	139		746		355	391
Block 5													
Mixed-Use Residential	80 DU	6 / DU	480	8%	38	2 : 8	8	31	9%	43	7 : 3	30	13

TABLE B

Hotel	250 RM	10 / Room	2,500	6%	150	6 : 4	90	60	8%	200	6 : 4	120	80
General Office	60,000 SF	17 /1000 SF	1,020	13%	133	9 : 1	119	13	14%	143	2 : 8	29	114
Medical Office	20,000 SF	50 /1000 SF	1,000	6%	60	8 : 2	48	12	11%	110	3 : 7	33	77
Mixed-Use Community Comercial	30,000 SF	80 /1000 SF	2,400	4%	96	6 : 4	58	38	10%	240	5 : 5	120	120
Block 5 Sub-Total			7,400		477		323	154		736		332	404
Block 6													
General Office	25,000 SF	17 /1000 SF	425	13%	55	9 : 1	50	6	14%	60	2 : 8	12	48
Medical Office	20,000 SF	50 /1000 SF	1,000	6%	60	8 : 2	48	12	11%	110	3 : 7	33	77
Mixed-Use Community Comercial	50,000 SF	80 /1000 SF	4,000	4%	160	6 : 4	96	64	10%	400	5 : 5	200	200
Block 6 Sub-Total			5,425		275		194	82		570		245	325
Block 7													
Mixed-Use Residential	130 DU	6 / DU	780	8%	62	2 : 8	12	50	9%	70	7 : 3	49	21
General Office	40,000 SF	17 /1000 SF	680	13%	88	9 : 1	80	9	14%	95	2 : 8	19	76
Medical Office	20,000 SF	50 /1000 SF	1,000	6%	60	8 : 2	48	12	11%	110	3 : 7	33	77
Mixed-Use Community Comercial	50,000 SF	80 /1000 SF	4,000	4%	160	6 : 4	96	64	10%	400	5 : 5	200	200
Block 7 Sub-Total			6,460		371		236	135		675		301	374
Adaptive Re-Use Area													
Mixed-Use Residential	110 DU	6 / DU	660	8%	53	2 : 8	11	42	9%	59	7 : 3	42	18
Student Housing	546 DU	6 / DU	3,276	8%	262	2 : 8	52	210	9%	295	7 : 3	206	88
General Office	40,000 SF	17 /1000 SF	680	13%	88	9 : 1	80	9	14%	95	2 : 8	19	76
Mixed-Use Community Comercial	156,000 SF	80 /1000 SF	12,480	4%	499	6 : 4	300	200	10%	1,248	5 : 5	624	624
Adaptive Re-Use Area Sub-Total			17,096		902		442	460		1,697		891	806
Quad													
Student Housing	174 DU	6 / DU	1,044	8%	84	2 : 8	17	67	9%	94	7 : 3	66	28
Mixed-Use Community Comercial	24,000 SF	80 /1000 SF	1,920	4%	77	6 : 4	46	31	10%	192	5 : 5	96	96
Quad Sub-Total			2,964		160		63	98		286		162	124

TABLE B

[illegible]

TABLE C

Table C
Project Trip Generation
University Place San Marcos
West Side

Use	Amount	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	#	In/Out	In	Out	%	#	In/Out	In	Out
Block 1-A													
Mixed-Use Residential	40 <i>DU</i>	6 / DU	240	8%	19	2 : 8	4	15	9%	22	7 : 3	15	6
General Office	250,000 <i>SF</i>	17 /1000 SF	4,250	13%	553	9 : 1	497	55	14%	595	2 : 8	119	476
Mixed-Use Community Comercial	5,000 <i>SF</i>	80 /1000 SF	400	4%	16	6 : 4	10	6	10%	40	5 : 5	20	20
<i>Block 1-A Sub-Total</i>			4,890		588		511	77		657		154	502
Block 1-B													
Mixed-Use Residential	400 <i>DU</i>	6 / DU	2,400	8%	192	2 : 8	38	154	9%	216	7 : 3	151	65
Mixed-Use Community Comercial	5,000 <i>SF</i>	80 /1000 SF	400	4%	16	6 : 4	10	6	10%	40	5 : 5	20	20
<i>Block 1-B Sub-Total</i>			2,800		208		48	160		256		171	85
Block 2													
Mixed-Use Residential	500 <i>DU</i>	6 / DU	3,000	8%	240	2 : 8	48	192	9%	270	7 : 3	189	81
Hotel	200 <i>RM</i>	10 / Room	2,000	6%	120	6 : 4	72	48	8%	160	6 : 4	96	64
General Office	50,000 <i>SF</i>	17 /1000 SF	850	13%	111	9 : 1	99	11	14%	119	2 : 8	24	95
Medical Office	100,000 <i>SF</i>	50 /1000 SF	5,000	6%	300	8 : 2	240	60	11%	550	3 : 7	165	385
Mixed-Use Community Comercial	60,000 <i>SF</i>	80 /1000 SF	4,800	4%	192	6 : 4	115	77	10%	480	5 : 5	240	240
<i>Block 2 Sub-Total</i>			15,650		963		575	388		1,579		714	865
Block 3													
Mixed-Use Residential	100 <i>DU</i>	6 / DU	600	8%	48	2 : 8	10	38	9%	54	7 : 3	38	16
Mixed-Use Community Comercial	6,000 <i>SF</i>	80 /1000 SF	480	4%	19	6 : 4	12	8	10%	48	5 : 5	24	24
<i>Block 3 Sub-Total</i>			1,080		67		21	46		102		62	40
Block 4-A													
Mixed-Use Residential	150 <i>DU</i>	6 / DU	900	8%	72	2 : 8	14	58	9%	81	7 : 3	57	24
<i>Block 4-A Sub-Total</i>			900		72		14	58		81		57	24

TABLE C

Block 4-B													
Mixed-Use Residential	100 DU	6 / DU	600	8%	48	2 : 8	10	38	9%	54	7 : 3	38	16
General Office	50,000 SF	17 /1000 SF	850	13%	111	9 : 1	99	11	14%	119	2 : 8	24	95
Medical Office	50,000 SF	50 /1000 SF	2,500	6%	150	8 : 2	120	30	11%	275	3 : 7	83	193
Mixed-Use Community Comercial	5,000 SF	80 /1000 SF	400	4%	16	6 : 4	10	6	10%	40	5 : 5	20	20
Block 4-B Sub-Total			4,350		325		239	86		488		164	324
Block 4-C													
Mixed-Use Residential	100 DU	6 / DU	600	8%	48	2 : 8	10	38	9%	54	7 : 3	38	16
General Office	50,000 SF	17 /1000 SF	850	13%	111	9 : 1	99	11	14%	119	2 : 8	24	95
Medical Office	50,000 SF	50 /1000 SF	2,500	6%	150	8 : 2	120	30	11%	275	3 : 7	83	193
Mixed-Use Community Comercial	15,000 SF	80 /1000 SF	1,200	4%	48	6 : 4	29	19	10%	120	5 : 5	60	60
Block 4-C Sub-Total			5,150		357		258	99		568		204	364
Block 5-A													
Mixed-Use Residential	250 DU	6 / DU	1,500	8%	120	2 : 8	24	96	9%	135	7 : 3	95	41
Mixed-Use Community Comercial	2,000 SF	80 /1000 SF	160	4%	6	6 : 4	4	3	10%	16	5 : 5	8	8
Block 5-A Sub-Total			1,660		126		28	99		151		103	49
Block 6													
Mixed-Use Residential	430 DU	6 / DU	2,580	8%	206	2 : 8	41	165	9%	232	7 : 3	163	70
Mixed-Use Community Comercial	2,000 SF	80 /1000 SF	160	4%	6	6 : 4	4	3	10%	16	5 : 5	8	8
Block 6 Sub-Total			2,740		213		45	168		248		171	78
SUB-TOTAL			39,220		2,330		1,228	1,102		3,473		1,645	1,828
10% Mixed-Use Reduction			3,922		233		123	110		347		164	183
5% Transit Reduction			1,961		116		61	55		174		82	91
NET NEW TOTAL PROJECT TRIPS			33,337		1,980		1,043	937		2,952		1,398	1,554

University District Specific Plan

San Marcos

On – Site Traffic Study

ATTACHMENT 2

9
35
3
10
4
16
4
12
7

57,000 AOT (WITH TRANSIT & MIXED USE 15%)

7

NO TARGET OPTION

ROUTE

~~CARMEN~~

STREET

79

CORDON V

10
10
16
4
10
3
35
12
100

100%

17%

Ridel
4.

STEVENS-CREIST ENGINEERING, INC.
CIVIL ENGINEERS • PLANNERS • LAND SURVEYORS

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P.O. Box 336
Charlotte, N.C. 28202

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FAX: 813-844-2232
WWW.HENRYDAVIS.COM

4/9

ADJUST FOR TRAFFIC EXPECTED TO
ACCESS VIA INDUSTRIAL ST.

UVSM OWNERSHIP

BLOCK 1E	7.7 AC.
BLOCK 2E	0.8 AC.
BLOCK 3E	2.2 AC.
BLOCK 4E	2.5 AC.
BLOCK 5E	6.7 AC.
BLOCK 6E	2.1 AC.
BLOCK 7F	3.1 AC.

NOTE:
ACREAGES ARE PRELIMINARY
AND SUBJECT TO CHANGE

100%
14%
OAKS

Block 5 (6.7 ac)
80 MUR
250 H
60K sq.ft. GO 11%
20K sq.ft. MO
30K sq.ft. MU/RC
300 P

Block 6 (2.1 ac)
25K sq.ft. GO 8%
20K sq.ft. MO
50K sq.ft. MU/RC
80 P 4611 ADT

Block 7 (3.1 ac) **5491 ADT**
130 MUR; 40K sq.ft. GO;
20K sq.ft. MO; 50K sq.ft. MU/RC;
200 P **10%**

Block 1A (7.2 ac)
80 MUR
120K sq.ft. MU/
RC 9.711 ADT
35 sq.ft. GO
15K sq.ft. MO
500 P 17%

Block 2 (.8 ac) 47
30 MUR 2193 AD
30K sq.ft. MU/RC

Redel Thru
to Carmel

"A" Street
Thru to Redel

Adaptive Re-use Area
110 MUR
546 SH 14,531
40K sq.ft. GO
156K sq.ft. MU/EC
200 P 267

Quad (2.1 ac) 4%
174 SH 2,519 AD
24K sq.ft. MU/RC

OCK 3E
22 ACV \

Block 4 (2.5 ac)
60 MUR 6282
20 SH 4BT
25K sq.ft. MO
70K sq.ft. MU/RO
200 P 11%

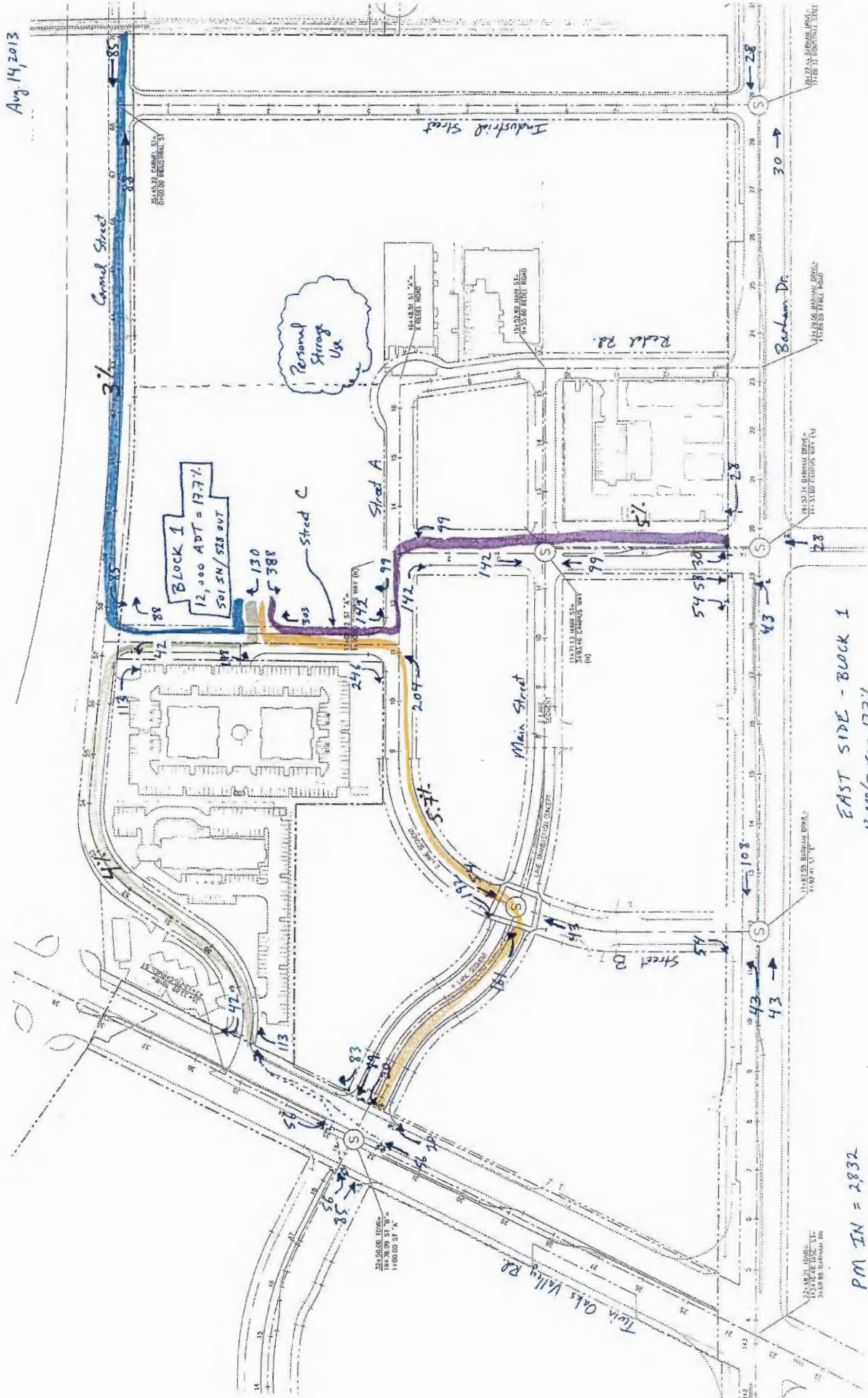
Block 3 (2.2 ac)
MUR 5.31
40 SH AD
70K sq.ft. MU/R
9%

DISCOVERY
STREET

10%

107. OK

Aug 14, 2013



A-1/8

EAST SIDE - BLOCK 1
12,000/67,485 = 17.7%

PM IN = 2,932
PM OUT = 2,927

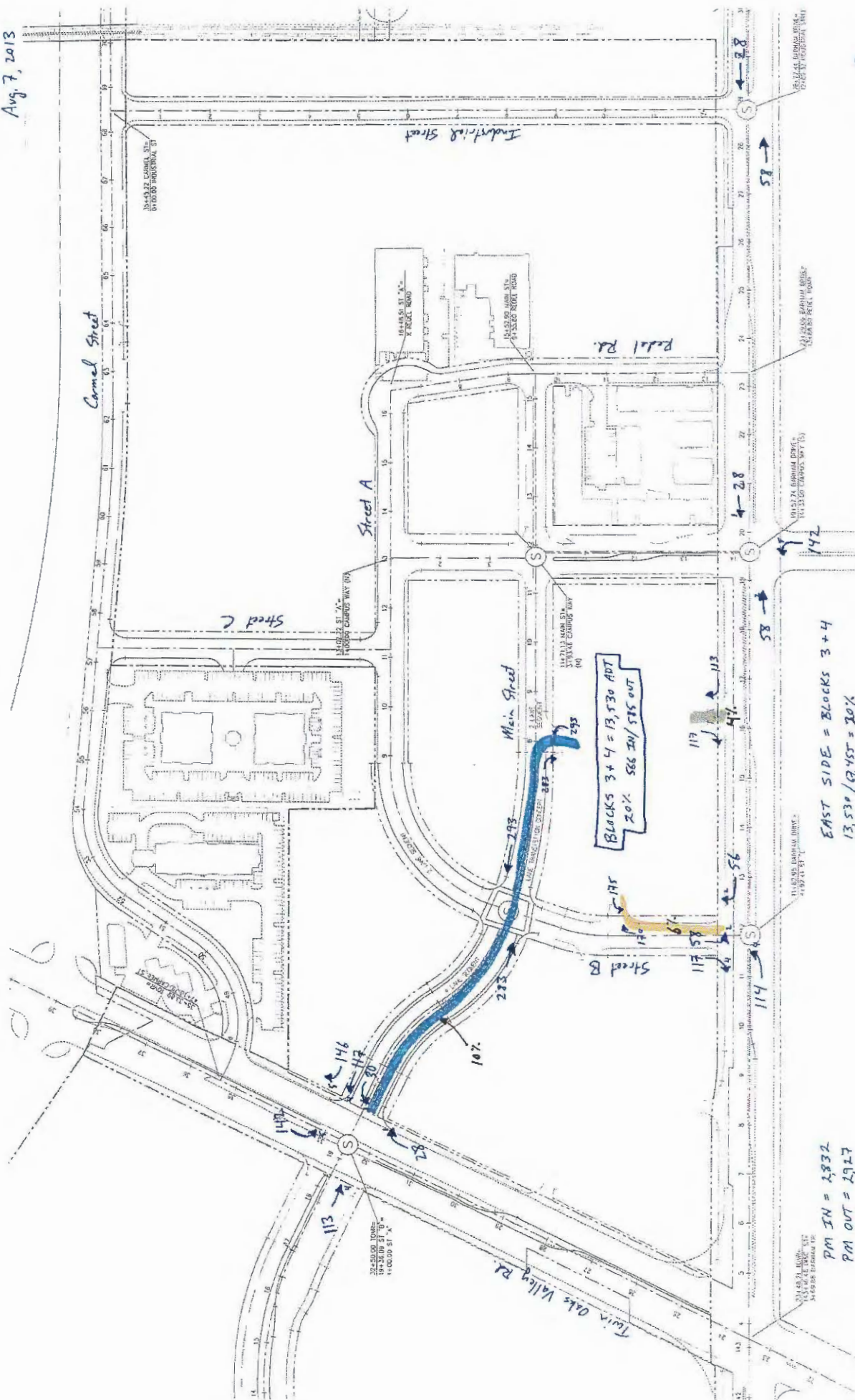
[illegible]

A-2/8

EAST SIDE = BLOCK 2
 2580/67455 = 3.8%

PM IN = 2,832
PM OUT = 2,927

Aug. 7, 2013

 $A - \frac{3}{8}$ 

Aug. 1, 1950

Carnel Street

Industrial Street

Main Street

Street A

Street B

Twin Oaks Valley Rd

BLOCK 5

7400 ADT = 10.9%

3408 IN / 317 OUT

1148.25' ELEVATION POINT

EAST SIDE = BLOCK 5

7400 / 67455 = 10.9%

PM IN = 2,832

PM OUT = 2,927

EAST SIDE = BLOCK 5
 $7,400 / 67,455 = 10.9\%$

PM IN = 2,832
PM OUT = 2,927

[illegible]

EAST SIDE = BLOCK 6
 $5,425 / 67,455 = 8.4\%$

PM IN = 2,832
PM OUT = 2,927

Aug. 14, 2012

Camel Street

Street A

Main Street

Street B

Twin Oaks Valley Rd

Block 7

6,460 ADT = 10%

283 IN/293 OUT

EAST SIDE = BLOCK 7

6,460/6,745 = 10%

PM IN = 2,832

PM OUT = 2,927

4192 41 51
EAST SIDE = BLOCK 7
6460/6745 = 101
55469/0945

PM IN = 2,832
PM OUT = 2,927

Aug 7, 2013

Adaptive Re-Use Area
17,096 ADT = 25%
708 IN / 732 OUT

Proposed
Parking
Garage
Entrance/Exit

Street A
Street B
Main Street
Carnel Street
Industrial Street
Twin Oaks Valley Rd

PM IN = 2832
PM OUT = 2927

EAST SIDE = Adaptive Re-Use Area
17,096/67,455 = 25%

$$A - \frac{7}{2}$$

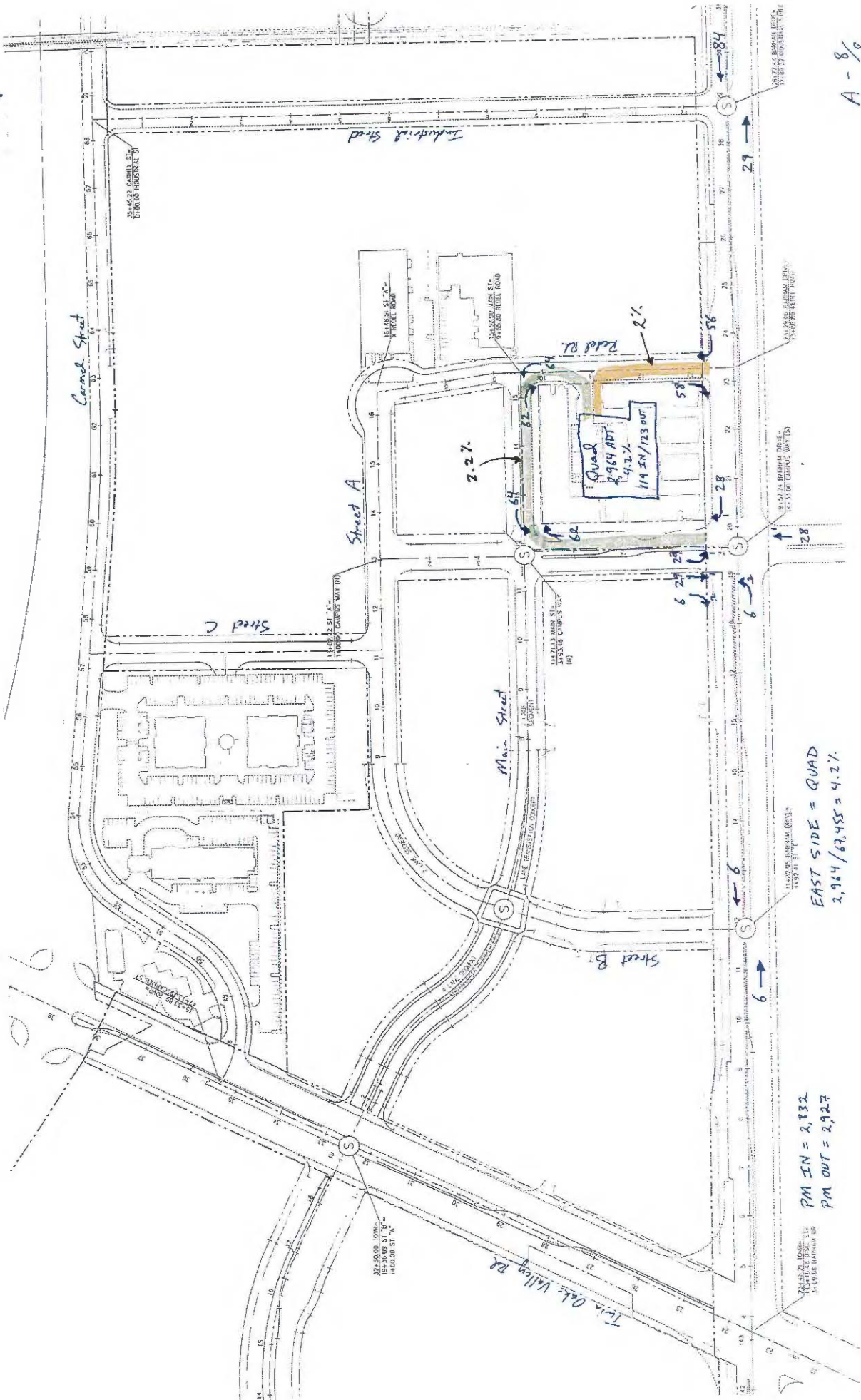
PM IN = 2832
PM OUT = 2927

EAST SIDE = Adaptive Re-Use Area
17,096 / 67,455 = 25%

Adaptive Re-Use Area
17,096 ADT = 25%
708 IN / 732 OUT

Twin Oaks Valley Rd

Aug 7, 2013



A - 8/8

EAST SIDE = QUAD
2,964 / 67,455 = 4.2%

PM IN = 2,832
PM OUT = 2,927

University District Specific Plan

San Marcos

On – Site Traffic Study

ATTACHMENT 3

WEST SIDE DISTRIBUTION %

33,000 ADT (WITH TRANSIT + MIXED USE - 15%) Capacity

2 Lane Bridge - 15k - 18k ADT

AREA SUMMARY:

<u>UYVM OWNERSHIP</u>	
BLOCK 1W-A	
NET	3.6 AC.
SLOPES/BASIN	2.0 AC.
GROSS	5.6 AC.
BLOCK 1W-B	
NET	11.2 AC.
SLOPES	4.0 AC.
GROSS	15.2 AC.
BLOCK 2W	
SLOPES	13.4 AC.
BLOCK 3W	
SLOPES	1.9 AC.
BLOCK 4W-A	
NET	5.5 AC.
SLOPES	0.8 AC.
GROSS	6.1 AC.
BLOCK 5W-A	
SLOPES	8.6 AC.
BLOCK 6W	
NET	12.4 AC.
SLOPES	4.0 AC.
GROSS	16.4 AC.
KNOLL PARK	14.5 AC.
ON-SITE ROADS	13.1 AC.
<u>UYVM OWNERSHIP</u>	
SUB-TOTAL	94.8 AC.
<u>SCRIPPS (FENTON)</u>	
BLOCK 4W-B	
NET	6.0 AC.
SLOPES	0.9 AC.
GROSS	6.9 AC.
BLOCK 5W-B	
SLOPES	0.1 AC.
OFF-SITE ROADS	2.3 AC.
<u>SCRIPPS (FENTON)</u>	
TOTAL	9.3 AC.
<u>UYVM/SCRIPPS (FENTON)</u>	
TOTAL	104.1 AC.

NOTE:
ACREAGES ARE PRELIMINARY
AND SUBJECT TO CHANGE



48

4

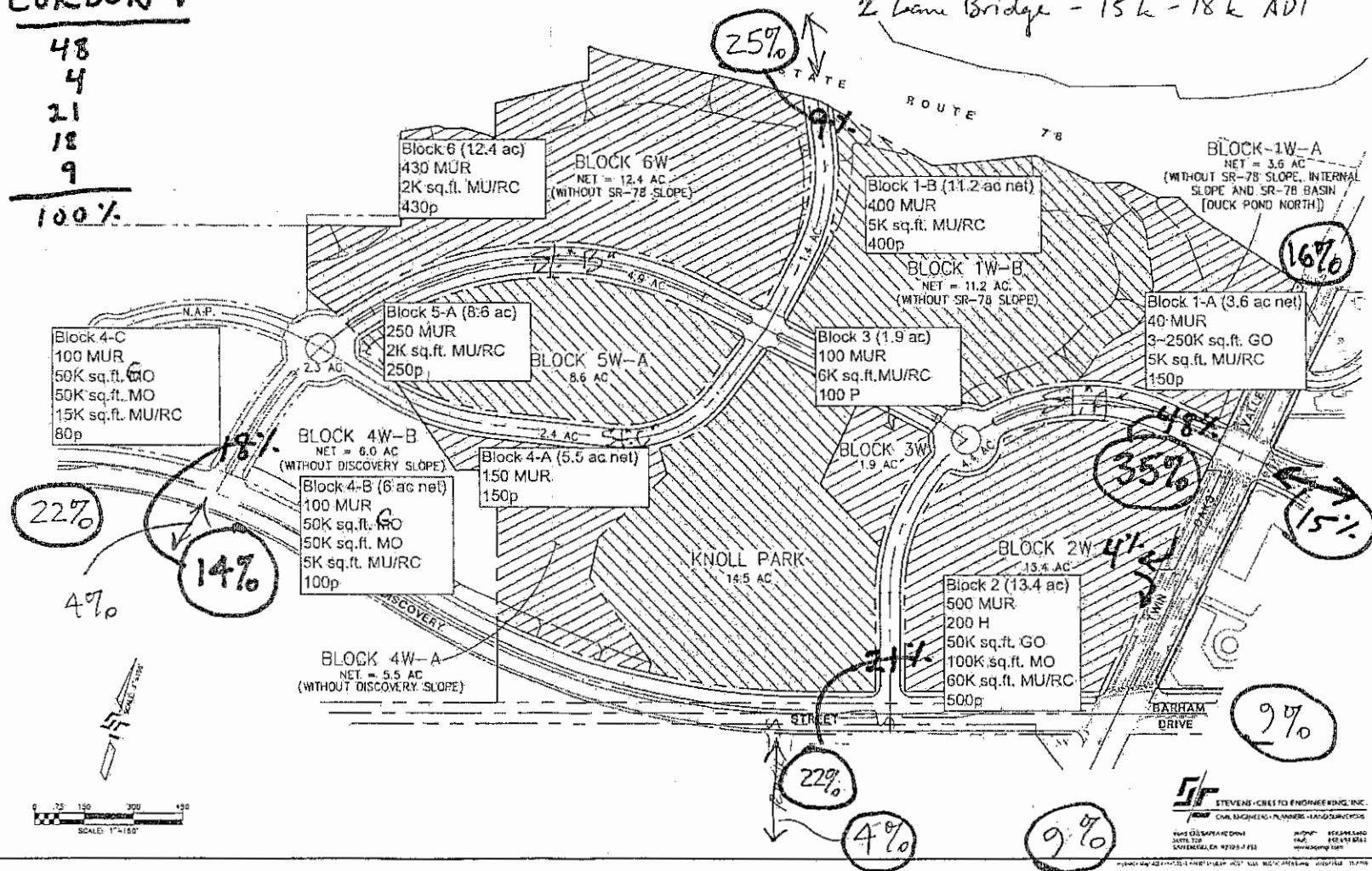
21

184

9

1999

100%



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